

# Barco Graphics 908 / Barco Reality 908



## Owner's Manual

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## **Federal Communications Commission (FCC Statement)**

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference.



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# 1. SAFETY INSTRUCTIONS

## Overview

- Safety Instructions

## 1.1 Safety Instructions

### Notice on Safety

This equipment is built in accordance with the requirements of the international safety standards EN60950, UL 1950 and CSA C22.2 No.950, which are the safety standards of information technology equipment including electrical business equipment. These safety standards impose important requirements on the use of safety critical components, materials and isolation, in order to protect the user or operator against risk of electric shock and energy hazard, and having access to live parts. Safety standards also impose limits to the internal and external temperature rises, radiation levels, mechanical stability and strength, enclosure construction and protection against the risk of fire. Simulated single fault condition testing ensures the safety of the equipment to the user even when the equipment's normal operation fails.

### Installation Instructions

Before operating this equipment please read this manual thoroughly, and retain it for future reference. Installation and preliminary adjustments should be performed by qualified BARCO personnel or by authorized BARCO service dealers.

### Owner's Record

The part number and serial number are located at the back side of the projector. Record these numbers in the spaces provided below. Refer to them whenever you call upon your BARCO dealer regarding this product.

Part Number:	
Ser. Number:	
Dealer:	

### Safety Indication on the Product



The lightning flash with an arrowhead within a triangle is intended to tell the user that parts inside this product may cause risk of electrical shock to persons.



The exclamation point within a triangle is intended to tell the user that important operating and/or servicing instructions are included in the technical documentation for this equipment.

Image 1-1  
Safety Indication

### Safety Warning

TO PREVENT FIRE OR ELECTRICAL SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE !

### Federal Communication Commission (FCC Statement)

This equipment has been tested and found to comply with the limits of a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used

## 1. Safety Instructions

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in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

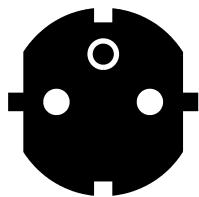


**The use of shielded cables is required to comply within the limits of Part 15 of FCC rules and EN55022.**

- All the safety and operating instructions should be read before using this unit.
- The safety and operating instructions manual should be retained for future reference.
- All warnings on the equipment and in the documentation manuals should be adhered to.
- All instructions for operating and use of this equipment must be followed precisely.

### On Safety

- This product should be operated from an AC power source. Power input is autoranging from 90 V to 230V.
- All equipment in the system is equipped with a 3-wire grounding plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.
- Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating.
- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock.
- Never spill liquid of any kind on the product. Should any liquid or solid object fall into the cabinet, unplug the set and have it checked by qualified service personnel before resuming operations.
- Lightning - For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the projector due to lightning and AC power-line surges.
- The wires of the main lead are colored in accordance with the following code.



**CEE 7 Plug**

Green and yellow : Ground  
Blue : Neutral  
Brown : Line

Image 1-2  
Power cord plugs



**ANSI 73.11 Plug**

Green and yellow : Ground  
White : Neutral  
Black : Line



**WARNING: This apparatus must be grounded (earthed) via the supplied 3 conductor AC power cable. If the supplied power cable is not the correct one, consult your dealer.**

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### Caution on Fire Hazard

**DO NOT PLACE FLAMMABLE OR COMBUSTIBLE MATERIALS NEAR THE PROJECTOR !**

BARCO large screen projection products are designed and manufactured to meet the most stringent safety regulations. This projector radiates heat on its external surfaces and from ventilation ducts during normal operation, which is both normal and safe. Exposing flammable or combustible materials to the close proximity of this projector could result in the spontaneous ignition of that material, resulting in a fire. For this reason, it is absolutely necessary to leave an "exclusion zone" around all external surfaces of the projector whereby no flammable or combustible materials are present. The exclusion zone must be not less than 10 cm (4") for Barco Retro Projectors. Do not cover the projector with any material while the projector is in operation. Keep flammable and combustible materials away from the projector at all times. Mount the projector in a well ventilated area away from sources of ignition and out of direct sun light. Never expose the projector to rain or excessive moisture. In the event of fire, use sand, CO<sub>2</sub>, or dry powder fire extinguishers; never use water on an electrical fire. Always have service performed on this projector by authorized BARCO service personnel. Always insist on genuine BARCO replacement parts. Never use non-BARCO replacement parts as they may degrade the safety of this projector.

## On Installation

- Do not place this equipment on an unstable cart, stand, or table. The product may fall, causing serious damage to it.
- Do not use this equipment near water.
- Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. The projector should not be placed in a built-in installation or enclosure unless proper ventilation is provided.
- Do not block the projector cooling fans or free air movement under and around the projector. Loose papers or other objects may not be nearer to the projector than 4" on any side.

## On Servicing

Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock!

Refer all servicing to qualified service personnel.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power cord or plug is damaged or frayed.
- If liquid has been spilled into the equipment.
- If the product has been exposed to rain or water.
- If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of the other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
- If the product has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance, indicating a need for service.
- Replacement parts: When replacement parts are required, be sure the service technician has used original BARCO replacement parts or authorized replacement parts which have the same characteristics as the BARCO original part. Unauthorized substitutions may result in degraded performance and reliability, fire, electric shock or other hazards. Unauthorized substitutions may void warranty.
- Safety check: Upon completion of any service or repairs to this projector, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

## On Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning. To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution. Never use strong solvents, such as thinner or benzine, or abrasive cleaners, since these will damage the cabinet. To ensure the highest optical performance and resolution, the projection lenses are specially treated with an anti-reflective coating, therefore, avoid touching the lens. To remove dust on the lens, use a soft dry cloth. Do not use a damp cloth, detergent solution, or thinner.

## On Repacking

Save the original shipping carton and packing material; they will come in handy if you ever have to ship your equipment. For maximum protection, repack your set as it was originally packed at the factory.

## On Illumination

In order to obtain the best quality for the projected image, it is essential that the ambient light which is allowed to fall on the screen be kept to an absolute minimum. When installing the projector and screen, care must be taken to avoid exposure to ambient light directly on the screen. Avoid adverse illumination on the screen from direct sunlight or fluorescent lighting fixtures. The use of controlled ambient lighting, such as incandescent spot light or a dimmer, is recommended for proper room illumination. Where possible, care should also be taken to ensure that the floors and walls of the room in which the projector is to be installed are non-reflecting, dark surfaces. Brighter surfaces will tend to reflect and diffuse the ambient light and hence reduce the contrast of the projected image on the screen.

*1. Safety Instructions*

---

## 2. AC POWER

### Overview

- AC Power Cord Connection
- AC Power Voltage

### 2.1 AC Power Cord Connection

#### How to connect the AC Power Cord?

Use the supplied power cord to connect your projector to the wall outlet.

1. Plug the female power connector into the male connector at the front side of the electronic block.

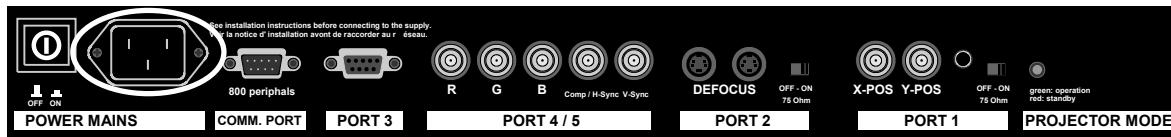


Image 2-1  
AC Power Cord Connection

### 2.2 AC Power Voltage

#### What is the AC Power Voltage?

The power input voltage is autoranging between 100V (-10%) and 240V (+6%).



## 3. SOURCE CONNECTIONS

### Overview

- Source Specifications
- Input Locations
- RGB Analog Source to Port 3
- RGB Analog Source with Composite Sync to Port 4/5
- Component Video Source to Port 4/5
- RGB Analog Source with Tri Level Sync to Port 4/5 (Optional)
- Component Video Source with Tri Level Sync to Port 4/5 (Optional)
- RS232 Connection
- Communication Port for Communication With Peripherals

### 3.1 Source Specifications

#### Source Specifications for the Barco Graphics 908

- Vertical Frequency Range: from 37 to 240 Hz.
- Maximum Horizontal Frequency is 110 KHz.
- Maximum Bandwidth is 120 MHz.

#### Source Specifications for the Barco Reality 908

- Vertical Frequency Range: from 37 to 240 Hz.
- Maximum Horizontal Frequency is 180 KHz.
- Maximum Bandwidth is 180 MHz.

### 3.2 Input Locations

#### Input Facilities

- RGBS or RG<sub>S</sub>B
- RGB3S or RG<sub>3S</sub>B
- (R-Y)Y(B-Y)S or (R-Y)Y<sub>S</sub>(B-Y) [Component Input]
- (R-Y)Y(B-Y)3S or (R-Y)Y<sub>3S</sub>(B-Y) [Component Input]

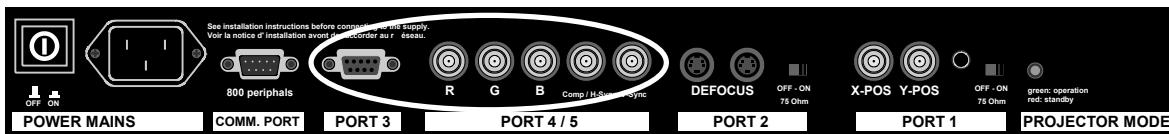


Image 3-1  
Input Facilities

#### Which source to which input

This table gives an overview of the relation between Input Port #, Source Type and Selection Keys on the RCU:

Input Port #	Source Type	Selection Keys on the RCU
1	For future expansion	—
2	For future expansion	—
3	RGB <sup>1</sup>	3
4/5	RGB <sup>1</sup>	4 or 5

1. Input signal : R, G and B with automatic sync detection between separate sync (separate composite sync or with separate hor and vert. sync) or sync on green (composite sync).

### 3. Source Connections

Input Port #	Source Type	Selection Keys on the RCU
4/5	Component video <sup>2</sup>	6
4/5	RGB with tri level sync <sup>3</sup>	7
4/5	Component video with tri level sync <sup>4</sup>	8

Table 3-1  
Input Port #, Source type and Selection Keys on the RCU

### 3.3 RGB Analog Source to Port 3

#### Which signal to Port 3?

Connect your RGB source with sync on green, composite or separate sync via an interface to Port 3. Always use an interface (e.g. Barco Magik Interface R9828120) when a computer and local monitor have to be connected to the projector as the signal cable coming from the computer is limited to 60 cm due to interferences. The RGB analog input accepts only sources with a horizontal frequency of 32 kHz and higher.



To connect a source lower than 32 kHz, an Optional Decoder + Limo Pro (R9828631) has to be installed.

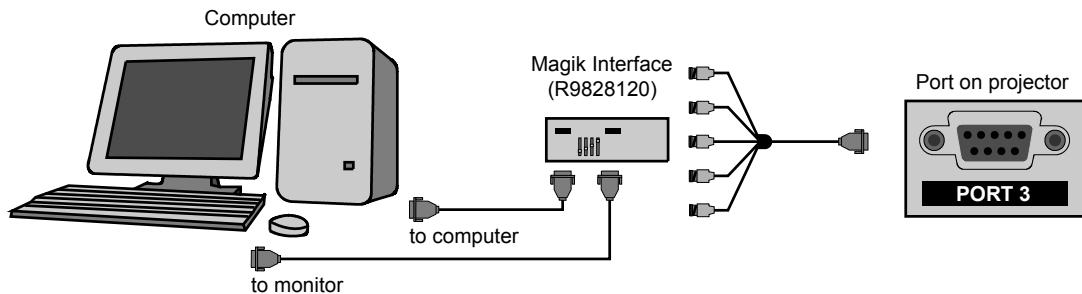


Image 3-2  
Port 3

#### Pin configuration D9 connector of Port 3

Pin #	Signal
1	Not Connected
2	Ground RGBS
3	Red
4	Green
5	Blue
6	Ground RGBS
7	Ground RGBS
8	Hor. / Comp. Sync.
9	Vert. Sync.

Table 3-2  
Pin configuration D9 connector of Port 3

#### Port 3 Input Selection

1. Press digit button 3 on the RCU.

2. Input signal : R-Y, Y and B-Y with separate composite sync or with separate hor and vert. sync or with composite sync on Y.
3. Input signal : R, G and B with separate tri level sync or with tri level sync on green.
4. Input signal : R-Y, Y and B-Y with separate tri level sync or with composite tri level sync.

## 3.4 RGB Analog Source with Composite Sync to Port 4/5

### Which signal to Port 4/5?

RGB analog input terminals with separate H and V sync inputs, composite sync input or with sync on green (BNC terminals). The projector detects automatically where the sync signal is located.



**Always use an interface (e.g. Barco Magik Interface R9828120) when a computer and local monitor have to be connected to the projector as the signal cable coming from the computer is limited to 60 cm due to interferences.**



**The RGB analog input accepts only sources with a horizontal frequency of 32 kHz and higher. To connect a source lower than 32 kHz, an Optional Decoder + Limo Pro (R9828631) has to be installed.**

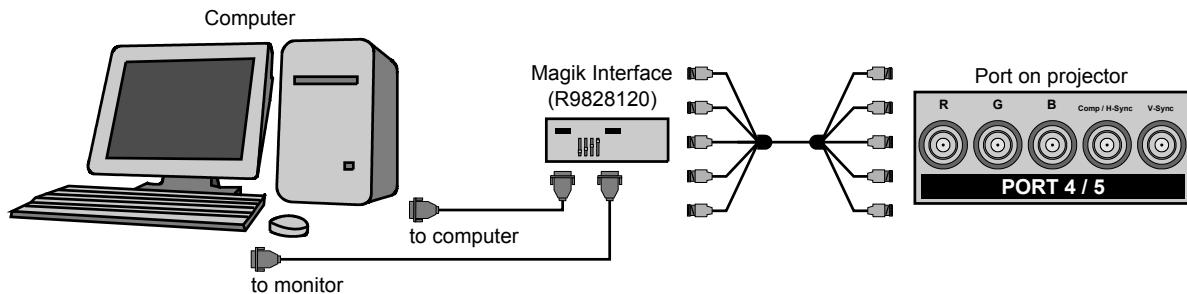


Image 3-3  
Port 4/5

### RGB Analog Video with Composite Sync Input Selection

1. Press digit button **4** or **5** on the RCU.

Button <b>4</b> on the RCU	Sync. on Green
Button <b>5</b> on the RCU	Separate Sync.

Table 3-3  
Port 4/5

## 3.5 Component Video Source to Port 4/5

### Which signal to Port 4/5?

R-Y(Y-B-Y) analog input terminals with sync input or with sync on the luminance (Y) input (BNC terminals). The projector detects automatically where the sync signal is located.



**Always use an interface (e.g. Barco Magik Interface R9828120) when a computer and local monitor have to be connected to the projector as the signal cable coming from the computer is limited to 60 cm due to interferences.**

### RGB Component Video Port 4/5 Selection

1. Press digit button **6** on the RCU.

## 3.6 RGB Analog Source with Tri Level Sync to Port 4/5 (Optional)

### Which signal to Port 4/5?

RGB analog input terminals with tri level sync input or with tri level sync on green (BNC terminals). The projector detects automatically where the sync signal is located. This feature requires a optional tri level sync module (Order number: R9828040).

### RGB Analog Source with Tri Level Sync on Port 4/5 Selection

1. Press digit button **7** on the RCU.

### 3. Source Connections

## 3.7 Component Video Source with Tri Level Sync to Port 4/5 (Optional)

### Which signal to Port 4/5?

Component video with tri level sync input can be connected to the projector via port 4/5. The projector detects automatically where the sync signal is located. This feature requires a optional tri level sync module (Order number: R9828040).

### Component Video Source with Tri Level Sync on Port 4/5 Selection

1. Press digit button **8** on the RCU.

## 3.8 RS232 Connection

### RS232 Input and RS232 Output of the projector

The projector is equipped with a RS232 port that allows them to communicate with a computer.

- Easy adjustment of the projector via a computer.
- Allow storage of multiple projector configurations and set ups.
- Wide range of control possibilities.
- Address range from 0 to 255.
- Sending data to the projector or copying the data from the projector to a hard memory device.

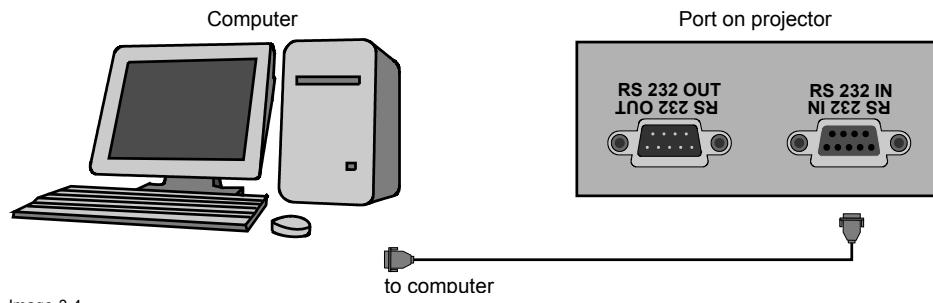


Image 3-4  
RS232 Connector

### How to set up the baud rate for the communication with a computer?

See changing the baud rate in the chapter Service Mode of the Owner's Manual.

## 3.9 Communication Port for Communication With Peripherals

### Connecting a RCVDS 05 switcher to the projector

- Up to 10 inputs (20 inputs when video and S-video) with the RCVDS 05 switcher (R9827880) and up to 90 inputs when 10 RCVDS switchers are linked via the 5-cable output modules.
- Serial communication with the projector.
- Remote control buttons on the RCVDS to control the projector (source selection and analog settings).
- The selected source number will be displayed on a 2 digit display and the selected input modules will be indicated with a LED on the rear.

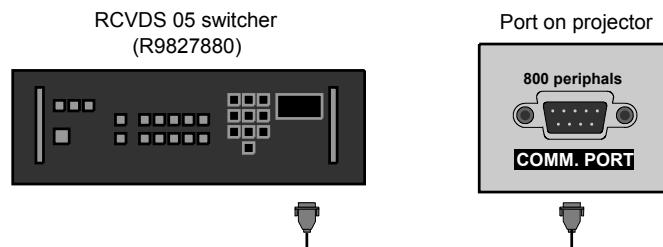


Image 3-5  
Connecting a RCVDS 05 switcher to the projector

## 4. GETTING STARTED

### Overview

- Batteries
- RCU & Local keypad
- Terminology overview
- Switching on the projector
- Using the RCU
- Projector Address
- Controlling the projector

### 4.1 Batteries

#### Overview

- Battery installation

#### 4.1.1 Battery installation

##### How to install the battery

Two batteries are packed together with the RCU. Before using your RCU, install first these batteries.

1. Remove the battery cover on the backside by pushing the handle a little towards the bottom of the RCU.
2. Lift up the top side of the cover at the same time.
3. Insert the batteries as indicated in the RCU.
4. Put the battery cover on its place.

### 4.2 RCU & Local keypad

#### How controlling the projector ?

The projector can be controlled by the local keypad or by the remote control unit.

#### Location of the local keypad ?

The local keypad is located on the backside of the projector.

#### Remote control functions.

This remote control includes a battery powered infrared (IR) transmitter that allows the user to control the projector remotely. This remote control is used for source selection, control, adaptation and set up. It includes automatic storing of picture controls (Brightness, Sharpness...) and settings.

Other functions of the remote control are :

- switching between stand by and operational mode.
- switching to "pause" (blanked picture, full power for immediate restarting)
- direct access to all connected sources.

### 4.3 Terminology overview

#### Overview

The following table gives an overview of the different functionalities of the keys.

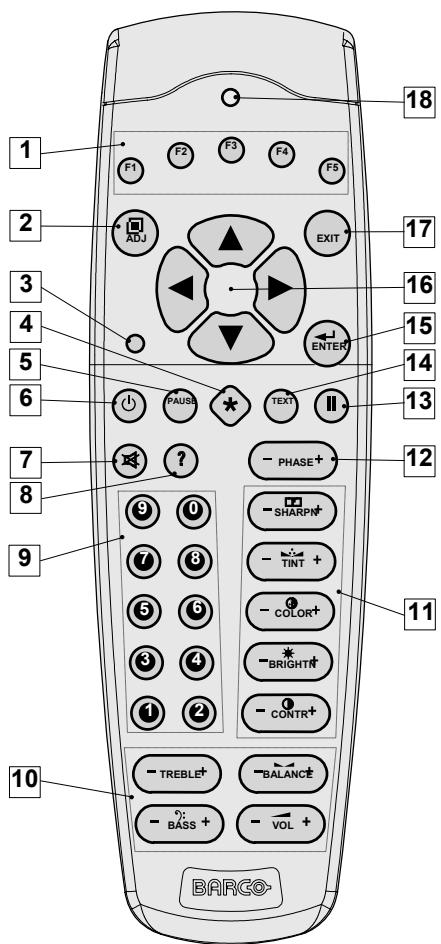


Image 4-1  
RCU function indication

1	Function keys	user programmable keys with functions for direct access.
2	ADJ.	Adjust key, to enter the adjustment mode
3	Address key	(recessed key), to enter the address of the projector (between 0 and 9). Press the recessed address key with a pencil, followed by pressing one digit button between 0 and 9.
4	Selection key (*)	to direct access the zoom/focus/shift functions.
5	PAUSE	to stop projection for a short time, press 'PAUSE'. The image disappears but full power is retained for immediate restarting.
6	STBY	standby button, to start projector when the power switch is switched on and to switch off the projector without switching off the power switch.  <b>Attention : Switching to Standby. When the projector is running and you want to go to standby, press the standby key for 2 seconds until the message 'Saving data, please wait' is displayed. Do not press any longer on the standby key otherwise the projector will restart.</b>
7	MUTE	to interrupt the sound reproduction.
8	?	Auto image, to center the image on the active LCD surface.
9	Digit buttons	direct input selection.
10	Audio controls	use these buttons to obtain the desired sound level.
11	Picture controls	press to adjust the projected image.
12	Phase	be sure the projector is warmed up for at least 15 min before adjusting the phase, press to adjust the phase of the projected image.
13	FREEZ	press to freeze the projected image.

14	TEXT	when adjusting one of the image, e.g. controls during a meeting, the displayed bar scale can be removed by pressing 'TEXT' key first. To re-display the bar scale on the screen, press 'TEXT' key again.
15	ENTER	to start up the adjustment mode or to confirm an adjustment or selection in the adjustment mode.
16	Cursor keys	to make menu selections when in the adjustment mode or to zoom/focus when the direct access is active.  Comparison between the cursor keys and the use of the '+' and '-' keys on the local keypad : RCU = local keypad  cursor key up = '+' key up cursor key down = '-' key down cursor key right = '+' key right cursor key left = '-' key left
17	EXIT	to leave the adjustment mode or to scroll upwards when in the adjustment mode.
18	RC operation indication	lights up when a button on the remote control is pressed. (This is a visual indicator to check the operation of the remote control)

Table 4-1

## 4.4 Switching on the projector

### How to switch on the projector?

1. Press the mains ON/OFF switch to switch on the projector.

Pressed	ON
Not Pressed	OFF

Table 4-2  
Mains Power Switch

Image 4-2

The Stand by indication lamp will show the status of the projector:

No light up	Switched OFF
Green color	Operational mode
Red color	Stand By mode

Table 4-3  
Status lamp

### The switching on modes

When switching on with the power switch, the projector can start in 2 different modes depending on the "Power Up" setting in the Service mode:

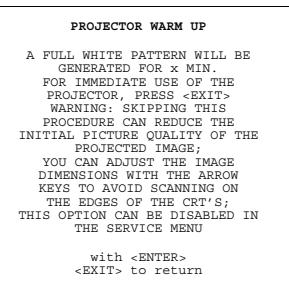
- Operational mode (Picture displayed).
- Stand By mode.

### Starting up in Operational Mode

The projector can start up with the selected source or the projector can start up with a warm up cycle message.

## 4. Getting Started

---



Menu 4-1

When this warm up cycle message appears on the screen, the menu offers the possibility to start with a x minutes taking warm up period (press **ENTER**) or to skip this cycle (press **EXIT**). The x minutes and the horizontal frequency can be programmed in the 'Service mode' under the item 'Projector Set Up'.



**This warm up period is built in so that the projector can reach its maximum specifications and minimize all distortions.**

When starting this warm up period, a full white image is shifted on the CRT faceplate to avoid a burn in. Every 30 seconds a text box will be displayed on another place on the screen with the remaining time to go. The image dimensions can be adjusted with the cursor keys to avoid scanning on the edges of the CRT's.

### How to interrupt the warm up period?

1. Press **EXIT** on the RCU.  
The warm up menu will be displayed with the remaining time indication.
2. Press **EXIT** again to quit the warm up cycle and to display the source.

### Starting up in Stand By Mode

The projector starts up in stand by. Press a digit key corresponding to the desired source or press STBY key. The projector displays the selected source or the warm up cycle message. When this warm up message appears on the screen, handle as described in 'Start up in Operational Mode'.



**WARNING: Do not display a stationary image with full brightness and contrast for longer than 20 min., otherwise you risk damage to the CRT's.**

### How to switch off the projector?

1. Use the same power switch to switch off the projector.

---

## 4.5 Using the RCU

---

### Pointing to the reflective screen

1. Point the front of the RCU to the screen surface.

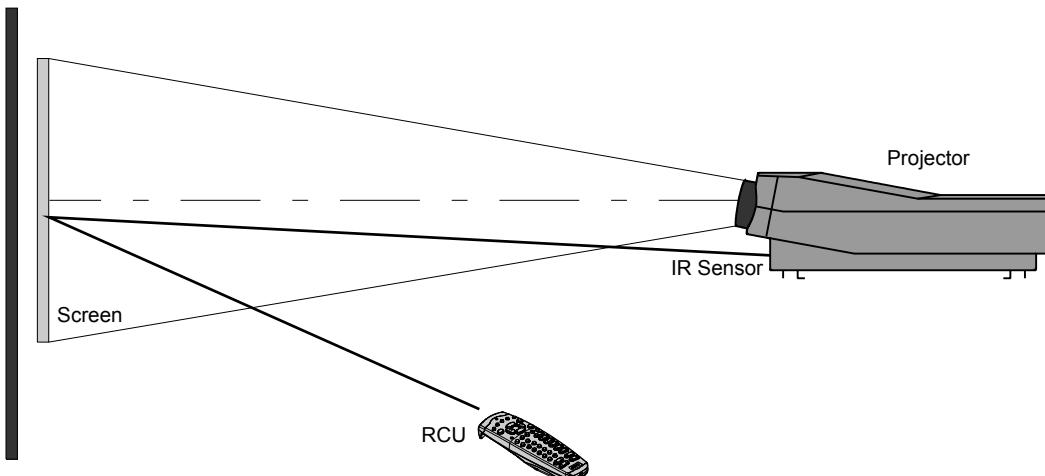


Image 4-3  
RCU to screen

### Hardwired Remote Input

1. Plug one end of the remote cable in the connector on the bottom of the RCU.
2. Plug the other end in the connector on the projector labelled 'Remote'.

### Directly to the IR sensor on the Optical Block or the Electronic Block

When using the wireless remote control, make sure you are within the effective operating distance (30m, 100ft in a straight line). The remote control unit will not function properly if strong light strikes the sensor window or if there are obstacles between the remote control unit and the projector's IR sensor.

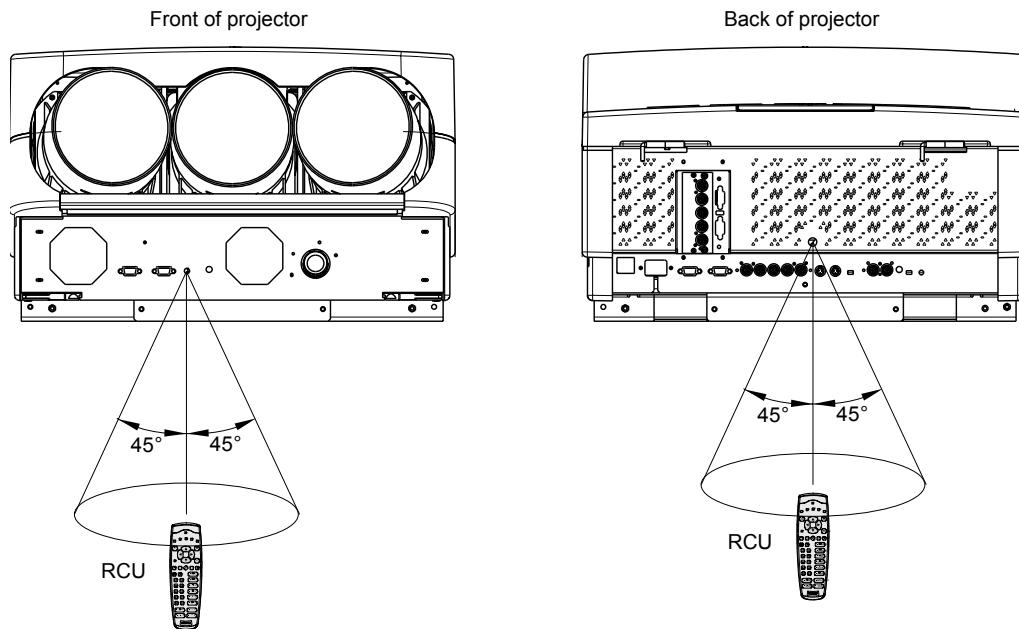


Image 4-4  
RCU to IR sensors

## 4.6 Projector Address

### 4.6.1 Controlling the projector



#### Projector address

Address installed in the projector to be individually controlled.



### Common address

Default address. Projector will always execute the command coming from a RCU programmed with that common address.

---

### Why a projector address ?

As more than one projector can be installed in a room, the separate projector should be separately addressable with an RCU or computer. Therefore each projector has its own address.

### Set up an individual Projector Address.

The set up of a projector address can be done via the software. See 'Change projector address' in chapter 'Service mode'.

### Projector controlling.

Every projector requires an individual address between 0 and 255 which can be set in the Service mode.

When the address is set, the projector can be controlled now:

- RCU for addresses between 0 and 9.
- computer, e.g. IBM PC (or compatible), Apple MAC, etc. for addresses between 0 and 255.

---



**A projector will respond to a RCU set to the common address ('0' or '1') regardless of what address is set in the projector itself.**

---



**The RCU is default programmed with address 0 or 1, 'common address'. With that 'common address' programmed into the RCU, every projector, without exception will listen to the commands given by this RCU. If it is necessary to control a specific projector, then enter the projector address into the RCU (only when that address is between 0 and 9). The projector with the corresponding address will listen to that specific RCU.**

---

### Common Address

Every projector has a common address '0' or '1'. The choice between '0' and '1' can be selected in the Service mode.

#### 4.6.2 Displaying and Programming addresses

##### Displaying the Projector Address on the Screen.

1. Press **Address** key (recessed key on the RCU) with a pencil.

The projector's address will be displayed in a 'Text box'



**To continue using the RCU with that specific address, it is necessary to enter the same address with the digit buttons (address between 0 and 9) within 5 seconds after pushing the address key. For example : if the Address key displays projector address 003, then press "3" digit button on the RCU to set the RCU's address to match the projector's address. Do not press 003 digits. This will address the remote control to '0' and control all projectors in the room. If the address is not entered within 5 seconds, the RCU returns to its default address (zero address) and control all projectors in the room.**

---

##### How to Program an Address into the RCU?

1. Press the **Address** key (recessed key on the RCU) with a pencil.
2. Enter the address with the digit buttons within 5 seconds after pushing the address key.  
**Note:** That address can be any digit between 0 and 9.

## 4.7 Controlling the projector

---

### Input Selection

Key in the corresponding slot number with the digit keys on the RCU. The selected source will be displayed.

### Picture Controls

When an image control is pressed, a text box with a bar scale, icon and function name of the control, e.g. 'brightness...' appears on the screen (only if text is ON). See example screen. The length of the bar scale and the value of the numeric indication indicate the

current memorized setting for this source. The bar scale changes as the control stick on the RCU is pressed or the + or - buttons on the local keypad.

Brightness	A correct 'brightness' setting is important for good image reproduction. Use the + button for a higher brightness. Use the - button for a lower brightness.
Contrast	A correct 'contrast' setting is important for good image reproduction. Adjust the contrast to the level you prefer, according to room lighting conditions. Use the + button for a higher contrast. Use the - button for lower contrast.
Color	Color saturation is only active for Video and S-Video. Adjust the color intensity of the picture. Use the + button for richer colors. Use the - button for lighter colors.
Tint	Tint is only active for Video and S-Video when using the NTSC 4.43 or NTSC 3.58 system. Use the + button Use the - button.
Sharpness	Use the + button for a sharper picture. Use the - button for a softer picture.
Phase	Use the + or - button to adjust the phase.
Freez	Press Freez to freeze the displayed image.

## Sound Controls

When a sound control is pressed, a text box with a bar scale, icon and function name of the control, e.g. 'volume...' appears on the screen (only if text is ON). See example screen. The length of the bar scale indicates the current memorized setting for this source. The bar scale changes as the + or - buttons of the control are pressed. The sound controls can only be adjusted with the RCU.

Volume	Volume control adjusts the volume. Use the + button for a higher volume. Use the - button for a lower volume.
Bass	Bass control adjusts the bass level (low tones). Use the + button for more low tones. Use the - button for less low tones.
Treble	Treble control adjusts the treble level (high tones). Use the + button for more high tones. Use the - button for less high tones.
Balance	Is only effective if a external amplifier with loudspeakers is connected to the audio output. The balance control adjust the sound level between the left and the right box. Use the + button for a higher sound level on the right box than on the left one. Use the - button for a higher sound level on the left box than on the right one.

## The Pause Key

When the Pause key is pressed, the image projection is stopped, a blue or black screen will be displayed and the projector remains with full power for immediate restart. The sound is not interrupted. The display on front of the projector will show a "P".

To restart the image :

- Press **Pause** key.
- Press **EXIT** key
- Select a source number.

## The Freeze key (Only with optional Line Multiplier)

When the Freeze key is pressed, the image is frozen until this key is pressed again (only with built in Line Multiplier).



## 5. ENTERING THE ADJUSTMENT MENUS

### 5.1 The Adjustment menus

#### What is available in the Adjustment menus

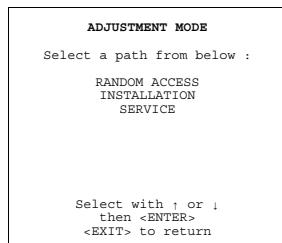
A complete set of adjustments divided in different modes are available to adjust the projector, these different modes are:

Random Access	Should only be accessed if the user is highly qualified and knows the sequence of adjustments. Has to be used to adjust the image.
Installation	Should only be selected if the projector is relocated and/or a different screen size is desired. When selecting Installation the user or operator will be warned to call a qualified technician to perform the installation procedure.
Service	Should only be selected if the user intends to change the predefined settings.

#### How to enter the Adjustment menus?

1. Press the **ADJUST** key.

The *Adjustment Mode* menu will be displayed.



Menu 5-1

### 5.2 Password Protection

#### Password Protection

Some items in the Adjustment Mode are password protected. While selecting such an item, the projector asks to enter your password.



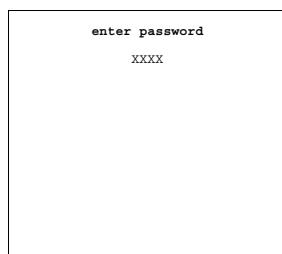
**Password Protection is only available when the password strap on the controller module is on. Contact a Barco authorized technician when no password is requested during the adjustment procedure and Password Protection is desired.**

#### Entering the Password

The Password contains 4 digits, when the projector asks to enter your password:

1. Enter the digits with the numeric keys on the RCU (e.g.: 2319).

For each digit entered, a 'X' appears on the screen under the displayed text 'enter password'



Menu 5-2



When the password is correctly entered, all other password protected items are accessible without reentering the password. When reentering the adjustment mode, it will be necessary to enter your password again when selecting a password protected item.

When the password is wrong, the error message “Wrong Password !!!” will be displayed.

---

# 6. RANDOM ACCESS ADJUSTMENT MODE

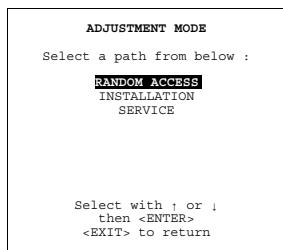
## Overview

- Introduction
- Random Access Overview
- Selecting Setup Pattern
- Picture Tuning
- Geometry
- Convergence
- Focusing
- Color Select
- Soft Edge (Optional)
- Driver Voltage (Optional)

## 6.1 Introduction

### How to start up Random Access Adjustment Mode?

1. Press the **ADJUST** key to start up the Adjustment Mode.  
The main *Adjustment Mode* menu will be displayed.
2. Push the **↑** or **↓** keys to highlight *Random Access* and press **ENTER** to select.



Menu 6-1



Some items in the Random access mode are password protected (when the password function is enabled). Enter your password to continue. All other password protected items are now also available if you stay in the adjustment mode.

## 6.2 Random Access Overview

---

### Random Access Overview

- Picture Tuning
  - Color Balance
  - Contrast Modulation
    - Contrast Equalisation
    - Contrast Edge Correction
  - Sync
  - Peaking
    - Off
    - Low Source Frequency
    - Mid Source Frequency
    - High Source Frequency
  - Clamp Mode
  - Port 2
  - Line Multiplier (Optional)
    - Motion Processing
    - Output Mode
    - Video Equalizing
    - Noise Reduction
    - Contrast Enhancement
    - Split Screen
    - Advanced Settings
      - Time Base Correction
      - Luminance Decay
      - V Sync Ref
      - Clamp Gating
      - Limo + Options
        - Coring
        - LTI
        - CTI
      - Factory Preset
  - Geometry
    - Green Convergence
    - H-Phase
    - Raster Shift
      - Coarse Green
      - Coarse Red Horizontal
      - Coarse Blue Horizontal
      - Fine Green
      - Fine Blue
    - Left / Right
      - Vertical Centerline
      - Side Precorrection
      - Left
      - Fine Side Correction
    - Top / Bottom
      - Horizontal Centerline
      - Horizontal Top
      - Horizontal Bottom
    - Size
    - Fine Horizontal Adjustment
    - Linearity
      - Coarse Linearity
      - Fine Vertical Linearity
      - Fine Horizontal Linearity
    - Blanking

- Convergence
  - Coarse Adjustment
  - Fine Adjustment
- Focusing
  - Red
    - Midpoint
    - Top
    - Bottom
    - Digital Adjustment
  - Green
    - Midpoint
    - Top
    - Bottom
    - Digital Adjustment
  - Blue
    - Midpoint
    - Top
    - Bottom
    - Digital Adjustment
  - Blue on Source
    - Midpoint
    - Top
    - Bottom
    - Digital Adjustment
- Color Select
- Soft Edge (Optional)
- Driver Voltage (Optional)

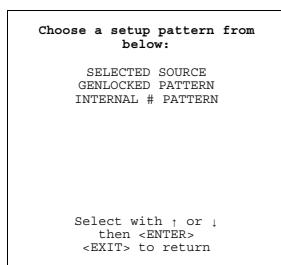
## 6.3 Selecting Setup Pattern

### How to select the Setup Pattern?

If an external source is connected to the projector, the following screen will be displayed. To select the desired setup pattern, handle as follow:

1. An external source is connected to the projector.

If yes, Push the **↑** or **↓** keys to highlight the desired setup pattern and press **ENTER** to select.



Menu 6-2

Selected Source	External source
Genlocked Pattern	Internally generated pattern, locked on the external source, the pattern changes with the adjustment selection.
Internal # Pattern	Internally generated pattern, locked on internal generated sync signals. (No external source necessary)

If no, The internal pattern menu will be displayed.

### When using the Internal # Pattern?

The Internal # Pattern menu will be displayed if the Internal Cross Hatch Pattern has been selected or if no source is connected to the projector.

## 6. Random Access Adjustment Mode

---

### Available Factory Preset Frequencies

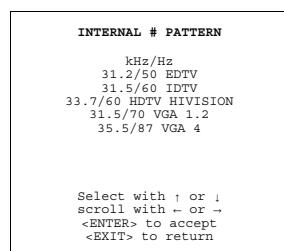
The table below lists the 16 fixed factory preset frequencies available. Another 8 blocks are custom programmable.

31.2/50	EDTV
31.5/60	IDTV
33.7/60	HDTV HIVISION
31.5/70	VGA 1.2
35.5/87	VGA 4
44.2/70	Super VGA 2
48.0/60	1024 x 768
61.0/76	Super VGA 3
63.9/60	1280 x 1024
72.1/67	Super VGA 4
75.0/60	1600 x 1200
77.5/96	1024 x 768
89.3/67	1600 x 1280
95.0/71	1600 x 1280
105.0/96	1280 x 1024
115.0/72	2048 x 1536

### How to select the desired Cross Hatch Frequency?

To select a desired cross hatch frequency, handle as follow:

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight the desired Cross Hatch Frequency.



Menu 6-3

2. Push the  $\leftarrow$  or  $\rightarrow$  keys to scroll to another page.
3. Press **ENTER** if the desired block is selected.



**The menus in this manual are created for an external source, connected to one of the inputs, and the 'Gen-locked Pattern' is selected.**

## 6.4 Picture Tuning

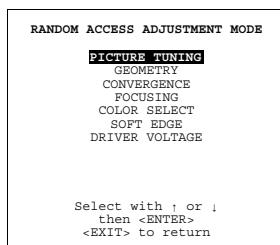
### Overview

- Starting up Picture Tuning
- Color Balance
- Contrast Modulation
- Sync mode: Fast/Slow
- Peaking
- Clamp mode: Normal/Restoration
- Port 2 Video/S-Video (Optional)
- Line Multiplier settings (Optional)

#### 6.4.1 Starting up Picture Tuning

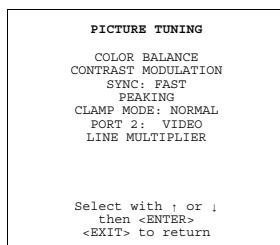
##### How to start up Picture Tuning?

1. Push the **↑** or **↓** keys to highlight *Picture Tuning* and press **ENTER** to select.



Menu 6-4

The *Picture Tuning* menu will be displayed.



Menu 6-5

Depending on the input source, this menu will display different items:

- Color Balance
- Contrast Modulation
- Sync: Slow/Fast
- Port 2: Video/S-Video
- Line Multiplier
- Peaking
- Clamp Mode

#### 6.4.2 Color Balance

##### What can be done?

The Color Balance function is used to select or adjust the color temperature of a projected white image by the projector.

The Color Balance can be adjusted on two different ways:

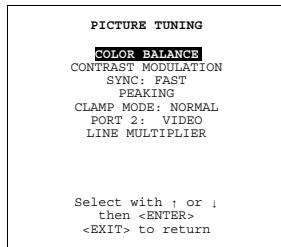
- By means of a fixed color balance. You have the choice between 3200 K (reddish), 4900 K, 6500 K (white) or 9300 K (bluish).
- By means of a custom white and black balance.

## 6. Random Access Adjustment Mode

---

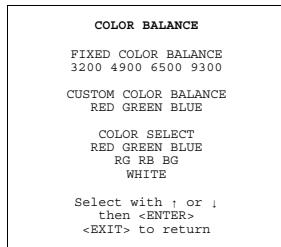
### How to select Color Balance?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Color Balance* and press **ENTER** to select.



Menu 6-6

The Color Balance menu will be displayed.



Menu 6-7

### How to select a Fixed Color Balance?

1. Push the cursor keys to highlight one of the 4 preprogrammed color temperatures within *Fixed Color Balance* and press **ENTER** to select.
2. Press **EXIT** to return to the *Picture Tuning* menu.

### How to adjust using Custom Color Balance?

1. Push the cursor keys to highlight the desired color within *Custom Color Balance* and press **ENTER** to select.
2. Push the  $\uparrow$  or  $\downarrow$  keys to adjust the Red Cut Off.
3. Push the  $\leftarrow$  or  $\rightarrow$  keys to adjust the Red Gain.  
A bar scale indicates the amount of adjustment.
4. Press **ENTER** to return to the *Color Balance* menu.
5. Repeat step 3 to 5 for Green and Blue.
6. Press **EXIT** to return to the *Picture Tuning* menu.

### How to use Color Select?

1. Push the cursor keys to highlight the desired color within *Color Select* and press **ENTER** to select.
2. Press **ENTER** to return to the *Color Balance* menu.
3. Press **EXIT** to return to the *Picture Tuning* menu.

#### 6.4.3 Contrast Modulation

##### Why Contrast Modulation?

In multi-screen installations, the goal is to obtain a continuous matched image, forming one homogeneous field-of-view with overall light output uniformity. The laws of physics applied to projection CRT and optics dictates that the center of the projected image will be brighter than the corners, this phenomenon is normally referred to as 'corner fall off'. Secondly, due to the normal off-axis projection of the red and blue images, CRT projection displays a phenomenon referred to as 'color shift', whereby one side of the screen is "reddish" an the other "blueish".

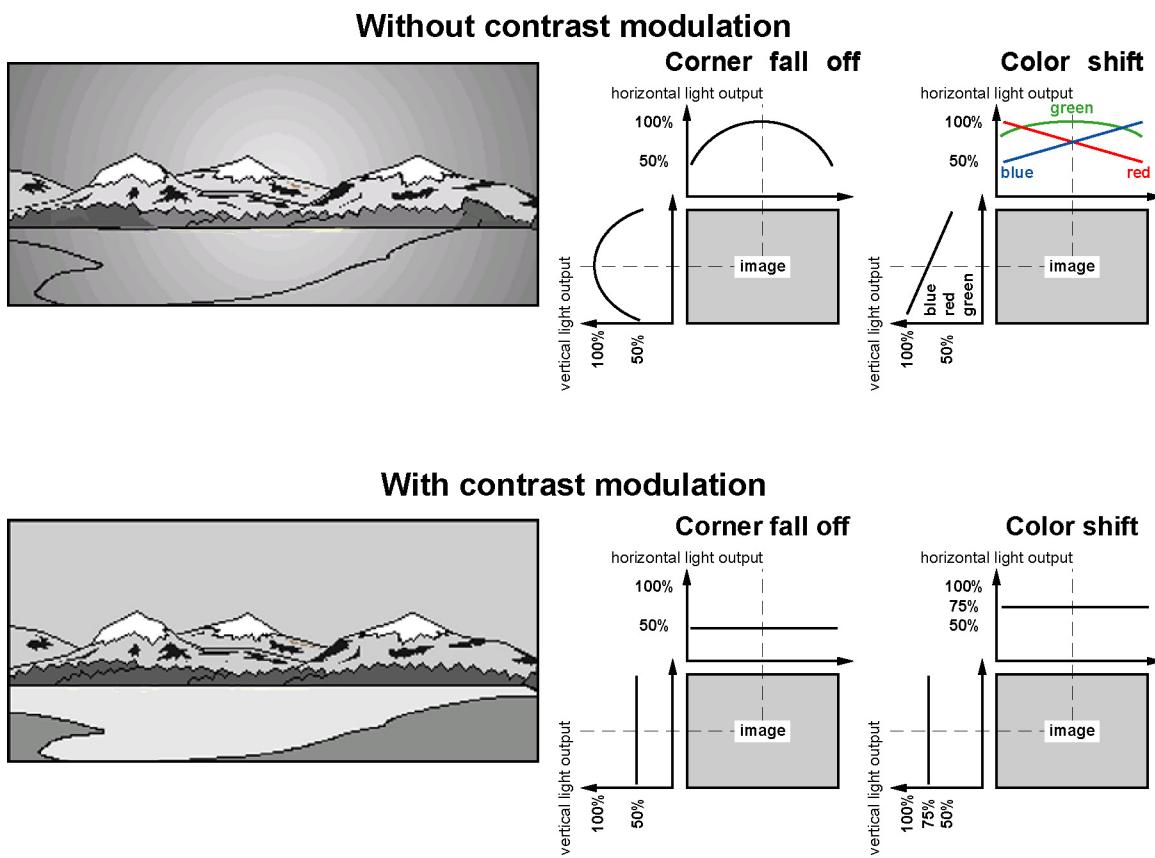


Image 6-1  
Contrast Modulation

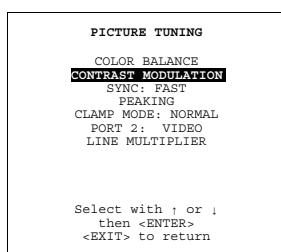


An external generated white image will be useful during the following adjustments.

Be sure the horizontal phase is correctly adjusted. The image must be centered on the raster with the horizontal phase adjustment, otherwise it is not possible to adjust the contrast modulation correctly.

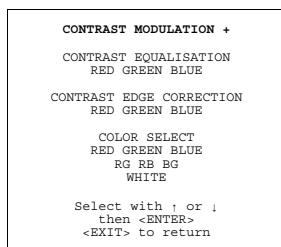
### How to select Contrast Modulation?

1. Push the **↑** or **↓** keys to highlight **Contrast Modulation** and press **ENTER** to select.



Menu 6-8

The **Contrast Modulation** menu will be displayed.



Menu 6-9

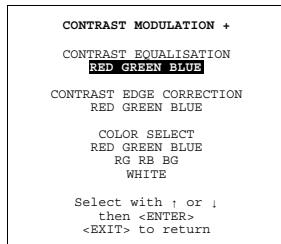
## 6. Random Access Adjustment Mode

### Why Contrast Equalization?

These adjustments are used for horizontal and vertical light equalization for the three specific colors separately. This compensates the error due to the different position of the picture tubes. One side of the image is reddish and the other side is blueish. This phenomenon is called Color Shift.

### How to adjust the Contrast Equalization?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight the desired color within *Contrast Equalization* e.g. Red and press **ENTER** to select.



Menu 6-10

Only a red image is displayed.

2. Push the  $\uparrow$  or  $\downarrow$  keys to adjust the vertical contrast equalization (top-bottom) and push the  $\leftarrow$  or  $\rightarrow$  keys to adjust the horizontal contrast equalization (left-right).

**Note:** *The best result is obtained by looking to the edges of the image.*

The Contrast Equalization bar scale will be displayed (bar scale = 50 : no correction).

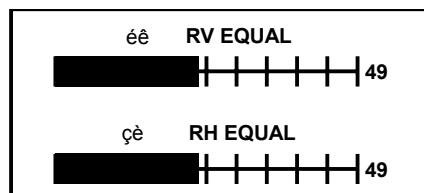


Image 6-2  
Contrast Equalization bar scale

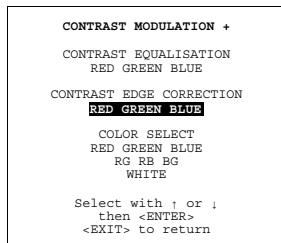
3. It can be an interaction of several adjustments.
4. Press **EXIT** to return to the *Picture Tuning* menu.

### Why Contrast Edge Correction?

Left and right (horizontally) and top and bottom (vertically) adjustments reduce the 'hot spot' in the center of the screen.

### How to adjust the Contrast Edge Correction (Hot Spot)?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight the desired color within *Contrast Edge Correction* e.g. Red and press **ENTER** to select.



Menu 6-11

2. Adjust with the cursor keys for the same light output in the corners as in the center of the image. Push the  $\uparrow$  or  $\downarrow$  keys for top-bottom adjustments and push the  $\leftarrow$  or  $\rightarrow$  keys for left-right adjustments.

**Note:** *Left-right adjustment must be done in combination with the top-bottom adjustment as both adjustments influence each other*

The Contrast Edge Correction bar scale will be displayed (bar scale = 50 : no correction).

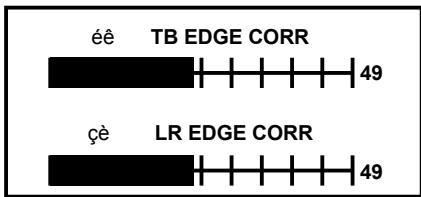


Image 6-3  
Contrast Edge Correction

3. Repeat for the other colors.

**Note:** These adjustments will reduce the total light output, so do not over adjust. A bar scale of 10 - 15 for both adjustments gives a good result.

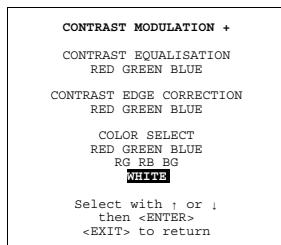
4. Press **EXIT** to return to the *Picture Tuning* menu.

### Why Color Select?

Sometimes it is easy to spot color irregularities when projecting only one color, a 2 color combination or a full white image.

### How to use Color Select?

1. Push the **↑** or **↓** keys to highlight the desired color within *Contrast Select* e.g. White and press **ENTER** to select.



Menu 6-12

2. Press **EXIT** to return to the *Picture Tuning* menu.

#### 6.4.4 Sync mode: Fast/Slow

##### What can be done?

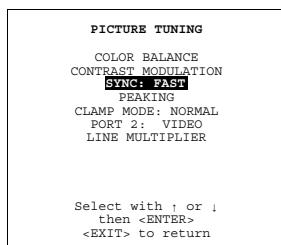
The Sync function is used to minimize horizontal jittering or tearing at the top to the displayed image.



The Sync Slow/Fast function is only available for RGBS, RGsB, component, tri level and component tri level sources.

##### How to adjust the Sync mode?

1. Push the **↑** or **↓** keys to highlight Sync.



Menu 6-13

2. Press **ENTER** to toggle between *Fast* or *Slow*.

**Note:** Sync is normally set to *Slow*. The *Fast* position is used to compensate for unsteady sync pulses from older video playback equipment.

## 6. Random Access Adjustment Mode

---

### 6.4.5 Peaking

#### What can be done?

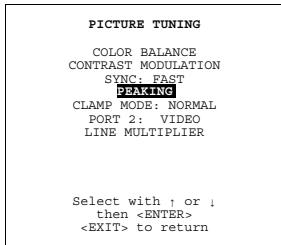
Peaking improves the contours in an projected image.



The Peaking function is only available for RGBS, RGsB, component, tri level and component tri level sources.

#### How to adjust Peaking?

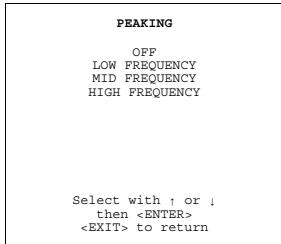
1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Peaking* and press **ENTER**.



Menu 6-14

**Note:** During the creation of new settings for a RGB source the corresponding peaking is switched on as default.

The *Peaking* menu will be displayed.



Menu 6-15

The following frequency areas are available:

Low Frequency Peaking	15–45Hz
Mid Frequency Peaking	45–85Hz
High Frequency Peaking	85–110Hz

2. Push the  $\uparrow$  or  $\downarrow$  keys to select the desired frequency area or off and press **ENTER** to activate.
3. Press **EXIT** to return to the *Picture Tuning* menu.

### 6.4.6 Clamp mode: Normal/Restoration

#### What can be done?

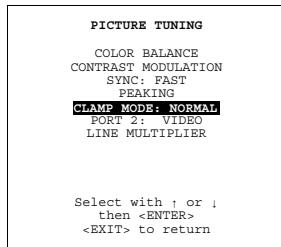
The clamp mode can be switch between *Normal* and *Restoration*.



The clamp mode function is only available for RGBS, RGsB and component sources.

### How to set up the Clamp mode?

1. Push the **↑** or **↓** keys to highlight *Clamp*.



Menu 6-16

2. Press **ENTER** to toggle between *Normal* or *Restoration*.

Normal	For all standard sources and all sources with a backporch > 0.8 µs or for sources with noise and spikes in the signal.
Restoration	For standard sources with a backporch between 0.4 µs and 0.8 µs or for sources with sync separate or sync on green.

### 6.4.7 Port 2 Video/S-Video (Optional)

#### What can be done?

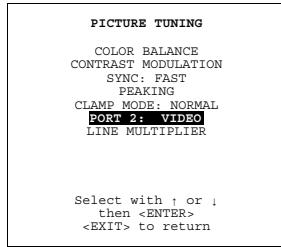
Port 2 can be used as Video or S-Video input.



This menu item is only available when the projector is equipped with a Decoder + Limo Pro (R9828631) and if an S-Video source is selected.

### How to configure Port 2?

1. Push the **↑** or **↓** keys to highlight *Port2*.



Menu 6-17

2. Press **ENTER** to toggle between *Video* or *S-Video*.

### 6.4.8 Line Multiplier settings (Optional)

#### Overview

- Starting up Line Multiplier settings
- Motion Processing On/Off
- Output Mode
- Video Equalizing
- Noise Reduction
- Contrast Enhancement
- Split Screen On/Off
- Advanced Settings

#### 6.4.8.1 Starting up Line Multiplier settings

##### What can be done?

The multiplier eliminates the video line patterns and improves the image stability.

In addition:

- The time base correction virtually eliminates the timing jitter caused by the common videocassette recorders.
- De-interlacing gets rid of line flicker.
- Film mode processing makes sure that material that has been converted from 24 Hz cinema to video (2:2 and 3:2 pull down) is displayed without artifacts.
- Dynamic noise reduction can be used to improve noisy video sources.
- Static contrast enhancement allows the user to adjust the image contrast to personal taste.
- Several detail-enhancing filters bring out details.



**This menu item is only available when the projector is equipped with decoder + Limo Pro (R9828631).**

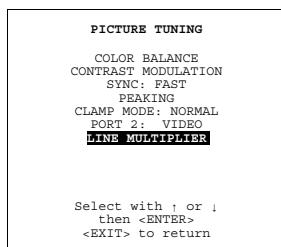
**Line multiplying is only possible for Video, S-Video, Component Video images on standard line frequency and RGB signals on 15 kHz.**

**The setting of the line multiplier will be saved together with the source number. Each time this source number is selected, the last saved version will be loaded.**

---

##### How to start up the Line Multiplier settings?

1. Push the **↑** or **↓** keys to highlight *Line Multiplier* and press **ENTER** to select.



Menu 6-18

The *Image Processing* menu will be displayed.

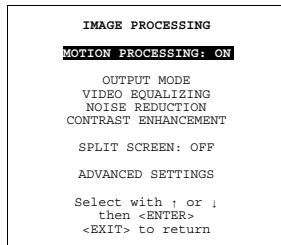
#### 6.4.8.2 Motion Processing On/Off

##### What can be done?

With this function it is possible to recognize whether the source material was originally film or video. That prevents the creation of motion artifacts.

##### How to toggle Motion Processing On/Off?

1. Push the **↑** or **↓** keys to highlight *Motion Processing*.



Menu 6-19

2. Press **ENTER** to toggle *Motion Processing* On/Off.

3. Press **EXIT** to return to the *Picture Tuning* menu.

### 6.4.8.3 Output Mode

#### What can be done?

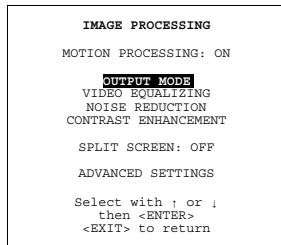
Within the output mode menu, it is possible to select a new output mode for a given input signal.

The input signal can be:

- line multiplied.
- interlaced.
- non-interlaced.

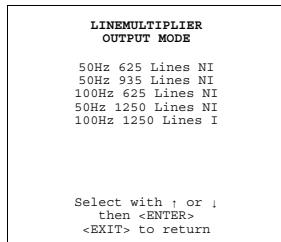
#### How to adjust the Output Mode?

1. Push the **↑** or **↓** keys to highlight **Output Mode** and press **ENTER** to select.



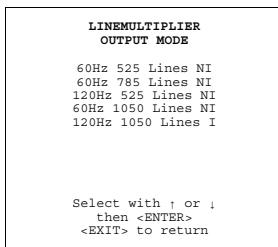
Menu 6-20

If your input signal is PAL or SECAM signal following menu will be displayed:



Menu 6-21

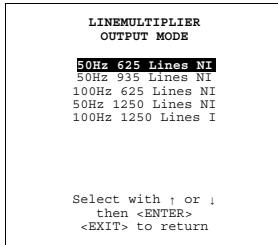
## 6. Random Access Adjustment Mode



Menu 6-22

If it is a NTSC signal following menu will be displayed:

2. Push the **↑** or **↓** keys to highlight the desired scan rate e.g. **100Hz 625 Lines NI** and press **ENTER** to activate..



Menu 6-23

50Hz	Vertical frequency of the image
1250 Lines	Quantity of horizontal lines
N I = Non Interlaced = Progressive Scan	Interlace mode

3. Press **EXIT** to return to the *Image Processing* menu.

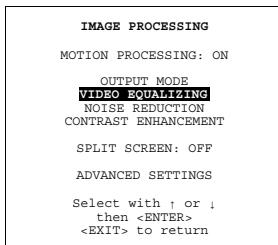
### 6.4.8.4 Video Equalizing

#### What can be done?

The sharpness of the image can be adjusted for 3 frequency bands (low, medium and high) separately. In addition to the 7 preprogrammed factory presets a customized adjustment of the sharpness for 3 ranges is also possible.

#### How to adjust Video Equalizing?

1. Push the **↑** or **↓** keys to highlight *Video Equalizing* and press **ENTER** to select.



Menu 6-24

The *Video Equalizing* menu will be displayed.

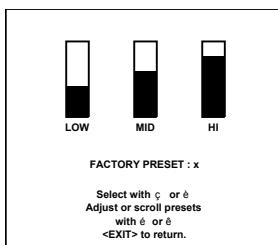


Image 6-4  
Video Equalizing menu

2. Push the  $\leftarrow$  or  $\rightarrow$  keys to select the desired frequency band (Low, Mid or High) or the Factory Preset : x.
3. Push the  $\uparrow$  or  $\downarrow$  keys to adjust the sharpness in the chosen frequency band (Low, Mid or High) or to scroll through the factory presets (x = 1 to 7).
- Note:** Factory preset 8 is equal to the custom adjustment as made with low, mid and high.
4. Press **EXIT** to return to the *Image Processing* menu.

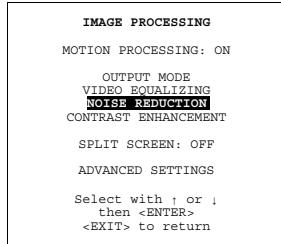
#### 6.4.8.5 Noise Reduction

##### What can be done?

Noisy, lower quality video images can be ameliorated by use of the Noise Reduction feature.

##### How to adjust Noise Reduction?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Noise Reduction* and press **ENTER** to select.



Menu 6-25

The Dynamic Noise Reduction bar scale will be displayed.

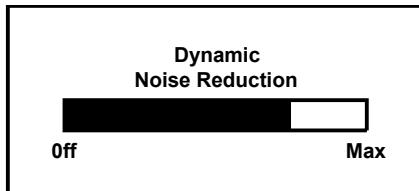


Image 6-5  
Dynamic Noise Reduction bar scale

2. Push the  $\uparrow$  or  $\downarrow$  keys to adjust the Noise Reduction.
3. Press **EXIT** to return to the *Image Processing* menu.

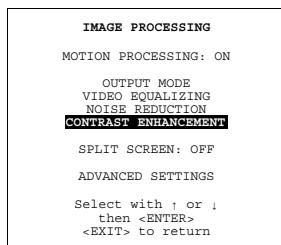
#### 6.4.8.6 Contrast Enhancement

##### What can be done?

Enhancing the contrast results in a more dynamic image.

##### How to adjust the Contrast Enhancement?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Contrast Enhancement* and press **ENTER** to select.



Menu 6-26

## 6. Random Access Adjustment Mode

The Contrast Enhancement bar scale will be displayed.

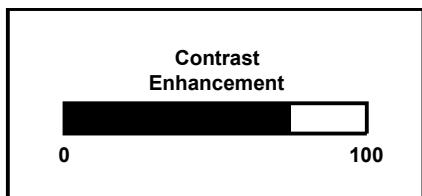


Image 6-6  
Contrast Enhancement bar scale

2. Push the  $\uparrow$  or  $\downarrow$  keys to adjust the Contrast Enhancement.
3. Press **EXIT** to return to the *Image Processing* menu.

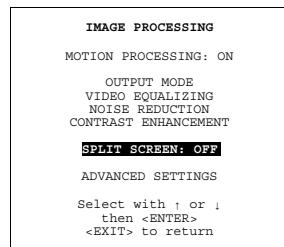
### 6.4.8.7 Split Screen On/Off

#### What can be done?

When the split screen is 'on', the left half of the image will be displayed without enhancements, the right half shows the image with all selected image processing enabled.

#### How to toggle Split Screen On/Off?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Split Screen*.



Menu 6-27

2. Press **ENTER** to toggle *Split Screen* On/Off.

### 6.4.8.8 Advanced Settings

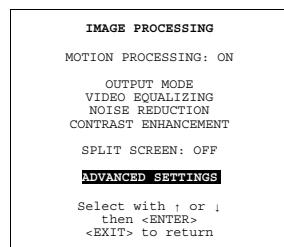
#### Overview

- Starting Up Advanced Settings
- Time Base Correction
- Luminance Delay
- Vertical Sync Reference
- Clamp Gating
- Limo Pro Options (Optional)
- Factory Presets

#### 6.4.8.8.1 Starting Up Advanced Settings

##### How to start up Advanced Settings?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Advanced Settings* and press **ENTER** to select.



Menu 6-28

The *Line Multiplier* menu will be displayed.

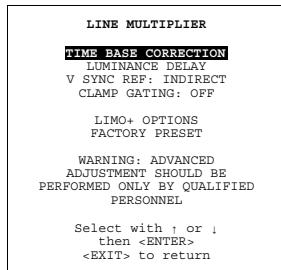
#### 6.4.8.8.2 Time Base Correction

##### What can be done?

With the Time Base Correction function it is possible to cleanup low quality videotape noise to obtain a more stable image.

##### How to toggle Time Base Correction On/Off

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Time Base Correction*.



Menu 6-29

2. Press **ENTER** to toggle *Time Base Correction* On/Off.

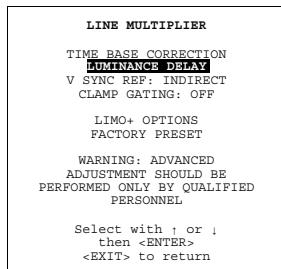
#### 6.4.8.8.3 Luminance Delay

##### When is it necessary?

When a color shift is recognized on the screen. e.g. if color bars are projected and a line between the colors is recognized.

##### How to adjust Luminance Delay?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Luminance Delay* and press **ENTER** to select.



Menu 6-30

The Luminance Delay bar scale will be displayed.

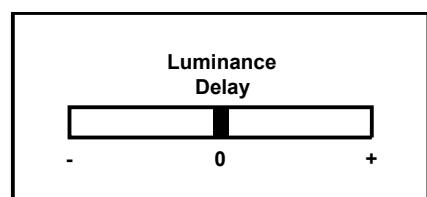


Image 6-7  
Luminance Delay bar scale

2. Push the  $\uparrow$  or  $\downarrow$  keys to adjust the Luminance Delay until the color shift is eliminated.
3. Press **EXIT** to return to the *Line Multiplier* menu.

#### 6.4.8.8.4 Vertical Sync Reference

##### What can be done?

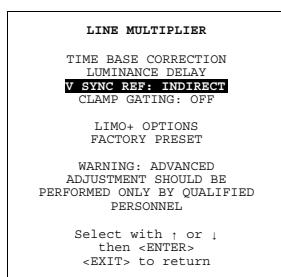
The Vertical Sync Reference can be set in 2 modes:

## 6. Random Access Adjustment Mode

Direct	This sync processing has the disadvantage that glitches and other disturbances in the video signal sometimes get passed and hence may cause problems in the image.
Indirect	This sync processing throws away any disturbances that are not really sync signals. By source switching a rolling effect on the image can occur. This sync processing is preferred especially with low quality material.

### How to toggle Vertical Sync Reference Direct/Indirect?

1. Push the **↑** or **↓** keys to highlight **Vertical Sync Reference**.



Menu 6-31

2. Press **ENTER** to toggle Vertical Sync Reference Direct/Indirect.

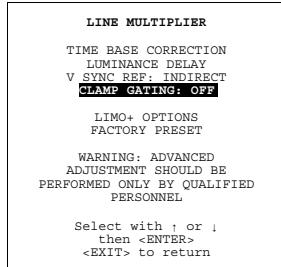
#### 6.4.8.8.5 Clamp Gating

##### When is it necessary?

Clamp Gating is useful when protection signals are present in the vertical interval of the video signal (macrovision), that would otherwise confuse the Limo Pro, causing horizontal brightness differences near the top of the screen.

##### How to toggle Clamp Gating On/Off?

1. Push the **↑** or **↓** keys to highlight **Clamp Gating**.



Menu 6-32

2. Press **ENTER** to toggle Clamp Gating On/Off.

**Note:** Default Clamp Gating is set to Off.

*Suggested default settings:*

Time Base Correction	On
Vertical Sync Reference	Indirect
Clamp Gate	Off

#### 6.4.8.9 Limo Pro Options (Optional)

##### Overview

- Starting Up Limo Pro Options
- Coring
- LTI
- CTI

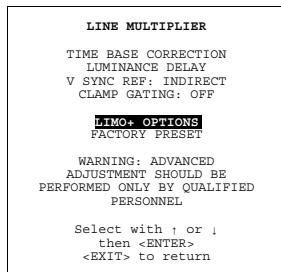
### 6.4.8.9.6 Starting Up Limo Pro Options

#### When available?

This menu item is only available when the projector is equipped with a line multiplier.

#### How to start up Limo Pro Options?

1. Push the **↑** or **↓** keys to highlight *Limo Pro Options* and press **ENTER** to select.



Menu 6-33

The *Limo Pro Options* menu will be displayed.

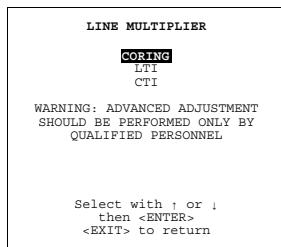
### 6.4.8.9.7 Coring

#### What can be done?

With coring, a noise threshold will be set for all filters.

#### How to adjust Coring?

1. Push the **↑** or **↓** keys to highlight *Coring* and press **ENTER** to select.



Menu 6-34

The Coring bar scale will be displayed.

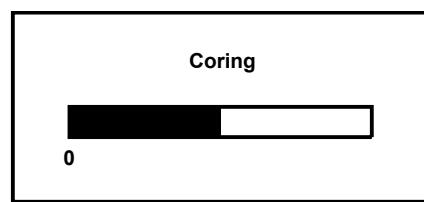


Image 6-8

2. Push the **↑** or **↓** keys to adjust the Coring.
3. Press **EXIT** to return to the *Limo Pro Options* menu.

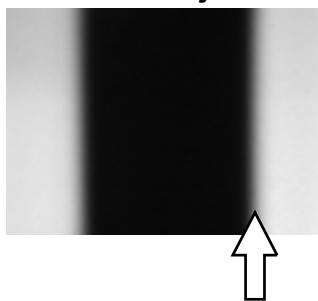
### 6.4.8.9.8 LTI

#### What can be done?

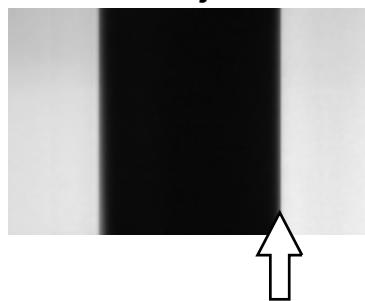
LTI = Luminance transient improvement. This function makes the luminance transients sharper (from dark areas to highlight areas) without overshoot, undershoot or ringing.

## 6. Random Access Adjustment Mode

### Without LTI adjustment



### With LTI adjustment

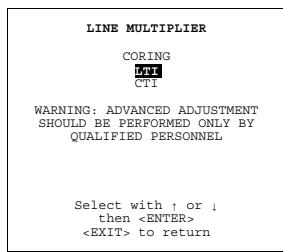


#### Adjust LTI for max black and white transient improvement

Image 6-9  
LTI basic principle

### How to adjust LTI?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *LTI* and press **ENTER** to select.



Menu 6-35

The Coring bar scale will be displayed.

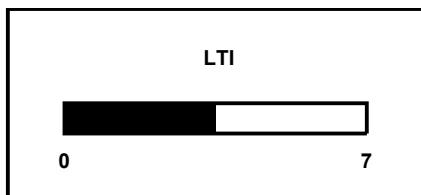


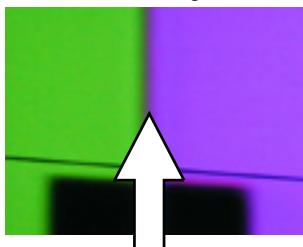
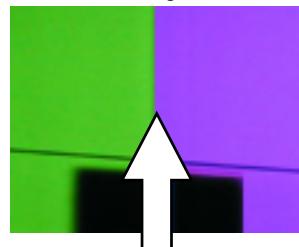
Image 6-10  
LTI bar scale

2. Push the  $\uparrow$  or  $\downarrow$  keys to adjust the LTI value.  
**Note:** Only 7 steps are possible.
3. Press **EXIT** to return to the *Limo Pro Options* menu.

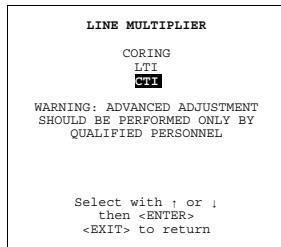
#### 6.4.8.9.9 CTI

### What can be done?

CTI = Chrominance (color) transient improvement. This function makes the chrominance transients (from one color to another) sharper without overshoot, undershoot or ringing.

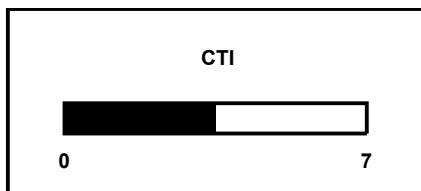
**Without CTI adjustment****With CTI adjustment****Adjust CTI for max color transient improvement**Image 6-11  
CTI principle**How to adjust CTI?**

1. Push the **↑** or **↓** keys to highlight **CTI** and press **ENTER** to select.



Menu 6-36

The LTI bar scale will be displayed.

Image 6-12  
CTI bar scale

2. Push the **↑** or **↓** keys to adjust the CTI value.  
**Note:** Only 7 steps are possible.
3. Press **EXIT** to return to the *Limo Pro Options* menu.

**6.4.8.9.10 Factory Presets****What can be done?**

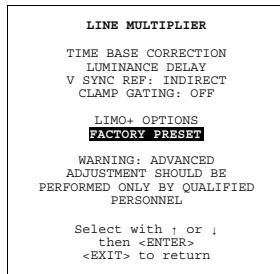
All settings for the Line Multiplier can be set to the Factory Presets.

These Factory Presets settings are:

Time Base Correction	On
Luminance Delay	0
Vertical Sync Reference	Indirect
Clamp Gating	Off

### How to set to the Factory Presets?

1. Push the **↑** or **↓** keys to highlight *Factory Presets*.



Menu 6-37

2. Press **ENTER** to set to the Factory Presets?
3. Press **EXIT** to return to the *Image Processing* menu.

---

## 6.5 Geometry

### Overview

- Starting Up Geometry
- Green Convergence
- Horizontal Phase Adjustment
- Raster Shift Adjustment
- Left-Right (East-West) Adjustments
- Top-Bottom (North-South) Adjustments
- Size Adjustment
- Fine Horizontal Size Adjustment
- Linearity Adjustment
- Blanking Adjustments

### 6.5.1 Starting Up Geometry

#### What can be done?

The geometry adjustments have to be done only on the green image. These adjustments are automatically implemented for the other color images.

The following adjustments can be adjusted:

- Left-Right (East-West) Corrections.
- Top-Bottom (North-South) Corrections.
- Blanking.
- Horizontal Amplitude.
- Vertical Amplitude.
- Vertical Linearity .
- Horizontal Phase.



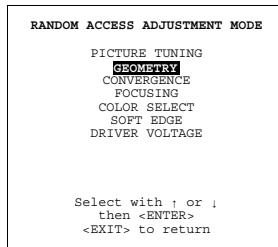
---

The convergence corrections are disabled during geometry corrections. The blanking corrections are only enabled during the blanking adjustments.

---

## How to start up Geometry?

- Push the **↑** or **↓** keys to highlight *Geometry* and press **ENTER** to select.



Menu 6-38

The *Geometry* menu will be displayed.

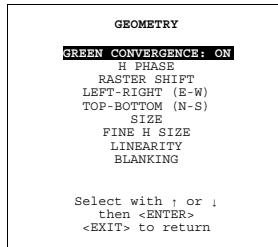
### 6.5.2 Green Convergence

#### Why switching your Green Convergence On/Off?

The adjustments for a good image should be done with the geometry corrections prior to the convergence corrections as the power consumption (heat production inside the projector) will be lower. With a lower heat production, the stability of the electronics will increase. So, start by switching off the convergence and adjust first all the geometry corrections. Switch on the convergence again and if a misalignment is still visible, correct that with the convergence corrections.

#### How to toggle Green Convergence On/Off?

- Push the **↑** or **↓** keys to highlight *Green Convergence*.



Menu 6-39

- Press **ENTER** to Toggle Green Convergence On/Off.

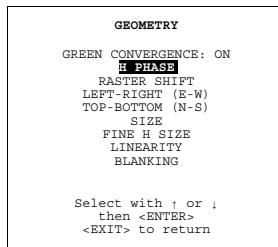
### 6.5.3 Horizontal Phase Adjustment



No horizontal phase adjustment is available on the Internal # Pattern. If the genlocked pattern was selected during the start up of the random access mode, the external source will be displayed.

#### How to adjust the Horizontal Phase?

- Push the **↑** or **↓** keys to highlight *Horizontal Phase* and press **ENTER** to select.



Menu 6-40

## 6. Random Access Adjustment Mode

The Horizontal Phase Text box will be projected in the middle of the external image. A bar scale and a number indicator (between 0 and 100) on the screen give a visual indication of the horizontal phase adjustment.

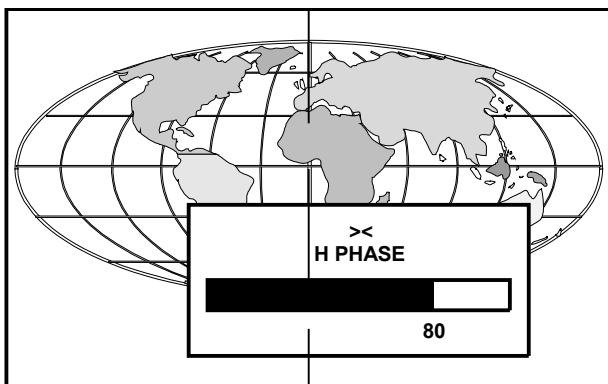


Image 6-13  
Horizontal Phase Text Box

2. If the raster shift is correctly adjusted, the H Phase text box is projected in the middle of the raster. At that moment, the "><" icon indicates the middle of the raster.  
Press the  $\leftarrow$  or  $\rightarrow$  keys to adjust the H Phase "><" icon to coincide with the middle of the projected image.
3. Press **EXIT** to return to the *Geometry* menu.

### 6.5.4 Raster Shift Adjustment



**WARNING:** It is necessary to look into the lenses to perform these adjustments. To avoid eye discomfort while looking into the lenses, reduce the contrast and gradually increase the brightness level until the raster becomes visible on the face of the CRT.

#### What has to be done?

The raster of the separate colors must be centered both horizontally and vertically on the center of the CRT surface. To center the raster, look into the lens of the respective color and use the cursor keys to move the raster.

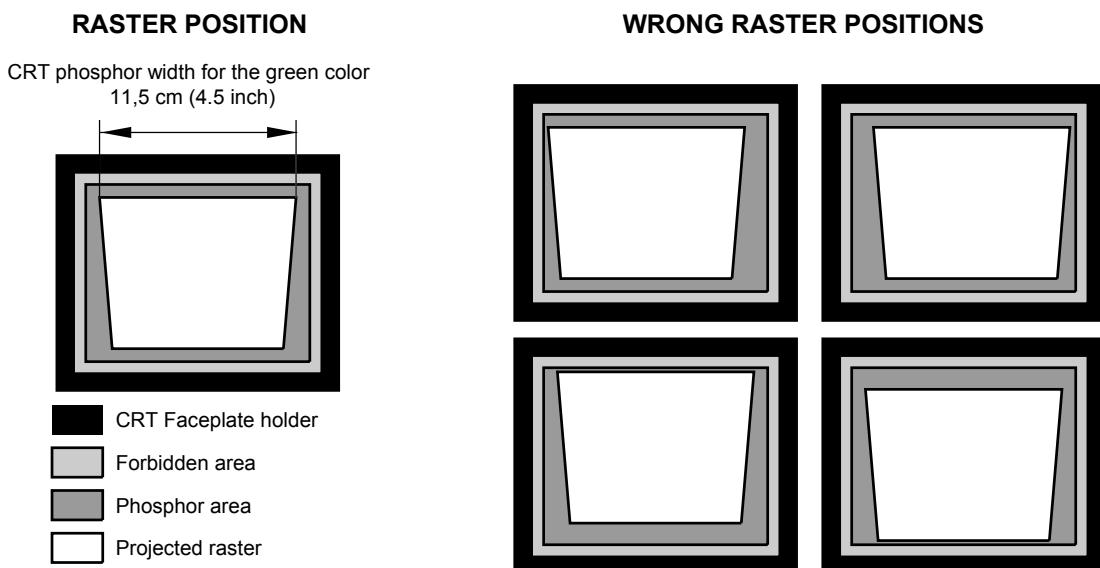
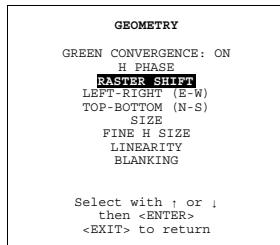


Image 6-14

## How to adjust the Raster Shift?

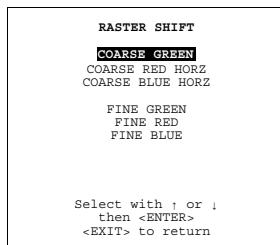
- Push the **↑** or **↓** keys to highlight **Raster Shift** and press **ENTER** to select.



Menu 6-41

The Raster Shift menu will be displayed.

- First push the **↑** or **↓** keys to highlight **Coarse Green** and press **ENTER** to select.



Menu 6-42

- Use the cursor keys to perform a Coarse Raster Shift and press **ENTER** to continue.

- Push the **↑** or **↓** keys to highlight **Coarse Red Horz** and press **ENTER** to select.

- Use the cursor keys to shift the Red Raster until Red is almost on Green.

- Repeat step 4 till 5 for **Coarse Blue Horz**.

- If necessary repeat step 4 till 5 to perform a Fine Raster Shift until the colors math each other.

**Note:** Horizontal and Vertical shifts for Red and Blue should end up with a setting close to 50%. If these settings are significantly greater or lesser than 50%, contact a BARCO authorized service technician.

- Press **EXIT** to return to the **Geometry** menu.

### 6.5.5 Left-Right (East-West) Adjustments

#### Overview

- Starting Up Left-Right (E-W) Adjustments
- Vertical Centerline
- Side Precorrection
- Left
- Fine Side Correction

#### 6.5.5.1 Starting Up Left-Right (E-W) Adjustments

##### What can be adjusted?

Left-Right adjustments affect only the vertical lines of the projected image.

The following adjustments can be executed:

- Vertical Centerline: Bow and Skew.
- Side Precorrections: Bow and Keystone.
- Left: Bow and Keystone.
- Fine Side Correction.

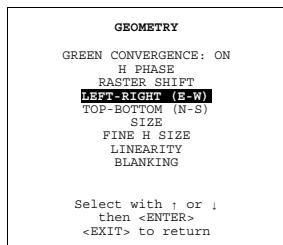


Only the Green image is displayed while making Left-Right Adjustments. The Red and Blue images will automatically be corrected in the same manner.

## 6. Random Access Adjustment Mode

### How to start up Left-Right (E-W) Adjustment?

1. Push the **↑** or **↓** keys to highlight *Left-Right (E-W)* and press **ENTER** to select.



Menu 6-43

The *Left-Right (E-W)* menu will be displayed.



All adjustments will be displayed on the screen with the function name, a bar scale and a number between 0 and 100.

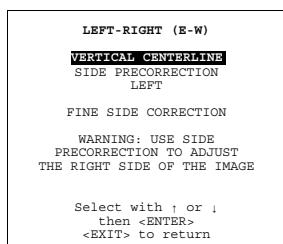
#### 6.5.5.2 Vertical Centerline

##### What can be done?

This will adjust the bow and skew of the vertical centerline.

##### How to adjust the Vertical Centerline?

1. Push the **↑** or **↓** keys to highlight the *Vertical Centerline* and press **ENTER** to select.



Menu 6-44

2. Use the **↑** or **↓** keys to adjust the curvature of the vertical lines in the middle of the image.

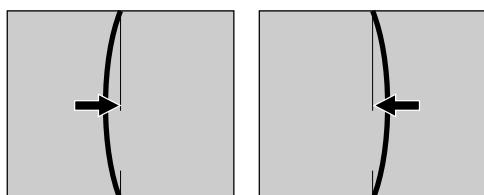


Image 6-15  
Vertical Centerline: Bow Adjustment

3. Use the **←** or **→** keys to adjust the tilting of the vertical lines in the middle of the image.

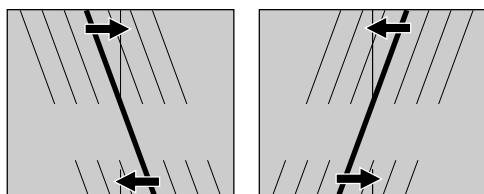


Image 6-16  
Vertical Centerline: Skew Adjustment

4. Press **EXIT** to return to the *Left-Right (E-W)* menu.

### 6.5.5.3 Side Precorrection

#### What can be done?

This will adjust the bow and skew of the vertical lines on both sides of the image.

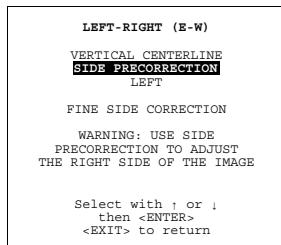


Although this adjustment corrects both sides, look only at the right side when performing this adjustment.

Use the side precorrection to adjust the right side of the image, adjust afterwards the left side with 'left' correction.

#### How to adjust the Side Precorrection?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight the *Side Precorrection* and press **ENTER** to select.



Menu 6-45

2. Use the  $\uparrow$  or  $\downarrow$  keys to adjust the curvature of the vertical lines on both sides (look only at the right side) of the screen image.

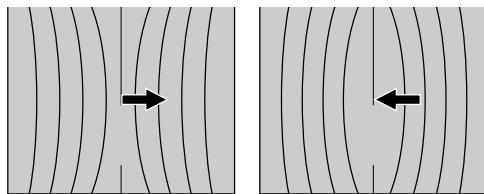


Image 6-17  
Side Precorrection: Bow Adjustment

3. Use the  $\leftarrow$  or  $\rightarrow$  keys to adjust the keystone geometry of the vertical lines on both sides (look only at the right side) of the screen image.

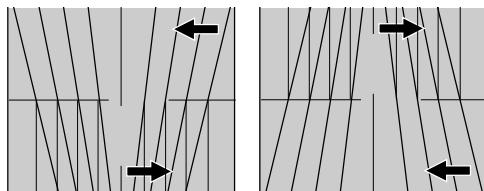


Image 6-18  
Side Precorrection: Keystone Adjustment

4. Press **EXIT** to return to the *Left-Right (E-W)* menu.

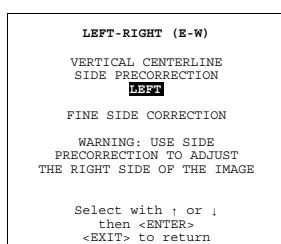
### 6.5.5.4 Left

#### What can be done?

This will adjust the bow and skew of the vertical lines on the left side of the image.

#### How to adjust Left?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight the *Left* and press **ENTER** to select.



Menu 6-46

## 6. Random Access Adjustment Mode

2. Use the  $\uparrow$  or  $\downarrow$  keys to adjust the curvature of the vertical lines on the left side of the screen image.

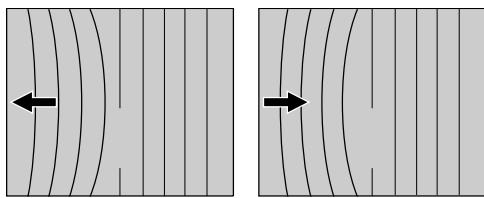


Image 6-19  
Left: Bow Adjustment

3. Use the  $\leftarrow$  or  $\rightarrow$  keys to adjust the keystone geometry of the vertical lines on the left side of the screen image.

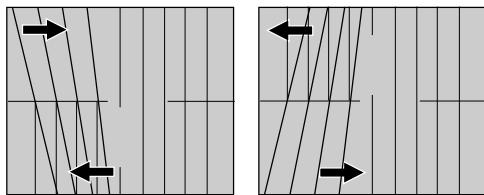


Image 6-20  
Left: Keystone Adjustment

4. Press **EXIT** to return to the *Left-Right (E-W)* menu.

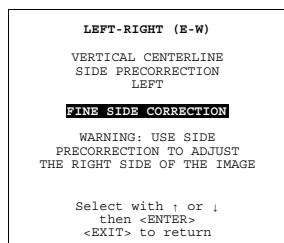
### 6.5.5.5 Fine Side Correction

#### What can be done?

This adjustment can be executed in 9 different areas and corrects the left and right side at the same time.

#### How to adjust the Fine Side Correction?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight the *Fine Side Corrections* and press **ENTER** to select.



Menu 6-47

A selection area menu will be displayed.

2. Push the  $\uparrow$  or  $\downarrow$  keys to select one of the 9 possible areas and press **ENTER** to confirm.

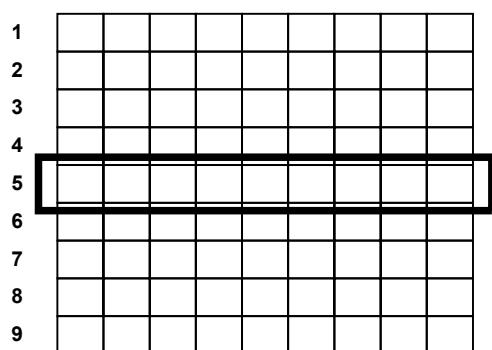


Image 6-21  
Fine Side Correction: 9 possible areas

3. Use the cursor keys to correct the sides of the image in this specific area.
4. Press **ENTER** to save the correction and to return to the selection screen.
5. Press **EXIT** to return to the *Left-Right (E-W)* menu.

## 6.5.6 Top-Bottom (North-South) Adjustments

### Overview

- Starting Up the Top-Bottom (N-S) Adjustments
- Horizontal Centerline
- Horizontal Top
- Horizontal Bottom

#### 6.5.6.1 Starting Up the Top-Bottom (N-S) Adjustments

##### What can be adjusted?

Top-Bottom adjustments affect only the horizontal lines of the projected image.

The following adjustments can be executed:

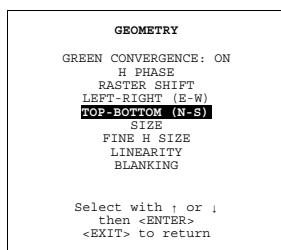
- Horizontal Centerline: Bow and Skew.
- Horizontal Top: Bow and Keystone.
- Horizontal Bottom: Bow and Keystone.



Only the Green image is displayed while making Top-Bottom Adjustments. The Red and Blue images will automatically be corrected in the same manner.

##### How to start up the Top-Bottom (N-S) Adjustments?

- Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Top-Bottom (N-S)* and press **ENTER** to select.



Menu 6-48

The *Top-Bottom (N-S)* menu will be displayed.



All adjustments will be displayed on the screen with the function name, a bar scale and a number between 0 and 100.

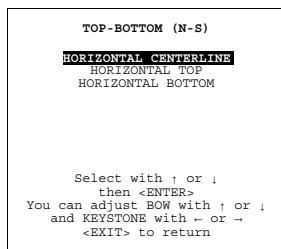
#### 6.5.6.2 Horizontal Centerline

##### What can be done?

This will adjust the bow and skew of the horizontal centerline.

##### How to adjust the Horizontal Centerline?

- Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Horizontal Centerline* and press **ENTER** to select.



Menu 6-49

## 6. Random Access Adjustment Mode

2. Use the  $\uparrow$  or  $\downarrow$  keys to adjust the curvature of the horizontal lines in the middle of the image.

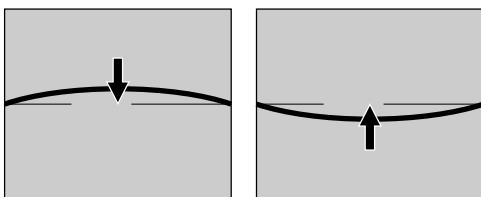


Image 6-22  
Horizontal Centerline: Bow Adjustment

3. Use the  $\leftarrow$  or  $\rightarrow$  keys to adjust the tilting of the horizontal lines in the middle of the image.

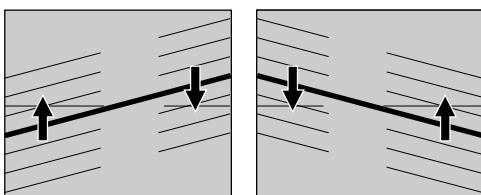


Image 6-23  
Horizontal Centerline: Skew Adjustment

4. Press **EXIT** to return to the *Top-Bottom (N-S)* menu.

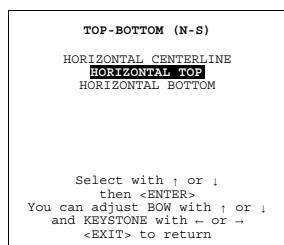
### 6.5.6.3 Horizontal Top

#### What can be done?

This will adjust the bow and skew of the horizontal lines on the top side of the image.

#### How to adjust Horizontal Top?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Horizontal Top* and press **ENTER** to select.



Menu 6-50

2. Use the  $\uparrow$  or  $\downarrow$  keys to adjust the curvature of the horizontal lines on the top of the image.

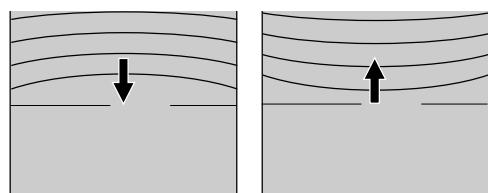


Image 6-24  
Horizontal Top: Bow Adjustment

3. Use the  $\leftarrow$  or  $\rightarrow$  keys to adjust the tilting of the horizontal lines on the top of the image.

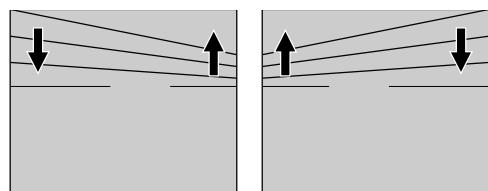


Image 6-25  
Horizontal Top: Skew Adjustment

4. Press **EXIT** to return to the *Top-Bottom (N-S)* menu.

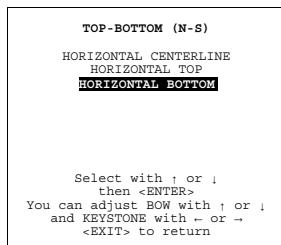
#### 6.5.6.4 Horizontal Bottom

##### What can be done?

This will adjust the bow and skew of the horizontal lines on the bottom side of the image.

##### How to adjust Horizontal Bottom?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Horizontal Bottom* and press **ENTER** to select.



Menu 6-51

2. Use the  $\uparrow$  or  $\downarrow$  keys to adjust the curvature of the horizontal lines on the bottom of the image.

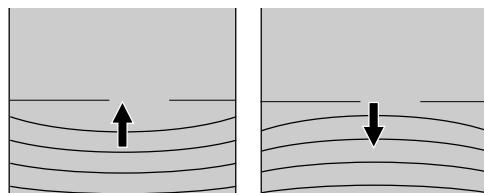


Image 6-26  
Horizontal Bottom: Bow Adjustment

3. Use the  $\leftarrow$  or  $\rightarrow$  keys to adjust the tilting of the horizontal lines on the bottom of the image.

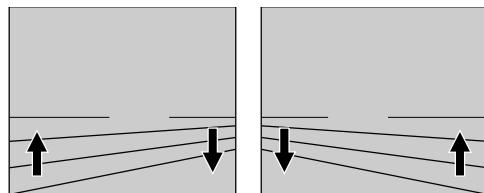


Image 6-27  
Horizontal Bottom: Skew Adjustment

4. Press **EXIT** to return to the *Top-Bottom (N-S)* menu.

#### 6.5.7 Size Adjustment

##### What can be done?

To adjust (correct) a little bit the horizontal and vertical picture size (when the projector is on its correct position) in regard with the installed screen.



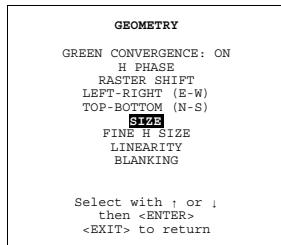
**In order to avoid loss of resolution in the projected image and to ensure maximum CRT longevity, do not use an excessively small size setting.**



**If the internal # pattern was selected, this pattern remains on the screen, if the genlocked pattern was selected, the external source will be displayed.**

### How to adjust the Size?

- Push the **↑** or **↓** keys to highlight **Size** and press **ENTER** to select.



Menu 6-52

A bar scale and a numeric indicator will help to gauge the size adjustment.

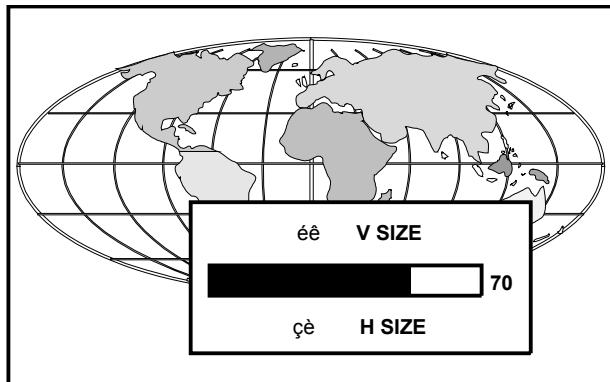


Image 6-28

- Push the **←** or **→** keys to adjust the horizontal size until the exact image width is obtained.

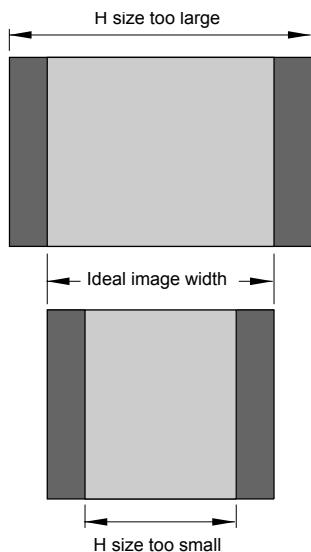


Image 6-29  
Horizontal Size Adjustment

- Push the **↑** or **↓** keys to adjust the vertical size until the exact image height is obtained.

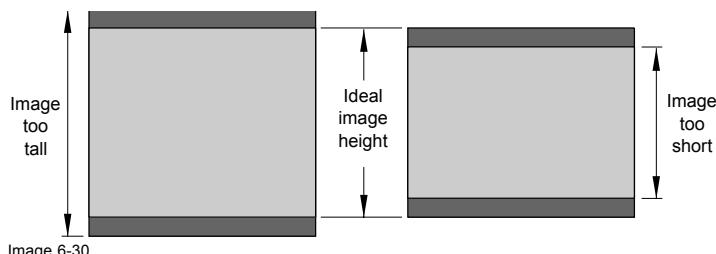


Image 6-30  
Vertical Size Adjustment

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4. Press **EXIT** to return to the *Geometry* menu.

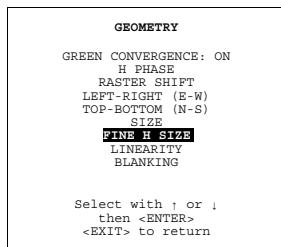
### 6.5.8 Fine Horizontal Size Adjustment

#### What can be done?

The horizontal size can be extra fine tuned.

#### How to perform a Fine Horizontal Size Adjustment?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Fine Horizontal Size Adjustment* and press **ENTER** to select.



Menu 6-53

2. Use the cursor keys to fine tune the horizontal size.

### 6.5.9 Linearity Adjustment

#### Overview

- Starting Up the Linearity Adjustment
- Coarse Linearity
- Fine Vertical Linearity
- Fine Horizontal Linearity

#### 6.5.9.1 Starting Up the Linearity Adjustment

##### What can be done?

For the standard projectors, the horizontal & vertical linearity adjustment functions correct for horizontal and vertical non-linearities which extend from the center of the image to the left and right of the image or to the top and bottom of the image.

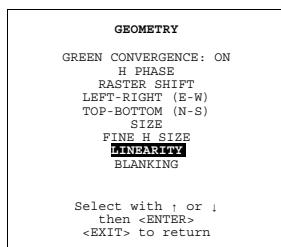


For the projectors equipped with the optional linearity adjustments, a fine vertical and horizontal linearity adjustment is added.

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#### How to start up the Linearity Adjustment?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Linearity* and press **ENTER** to select.



Menu 6-54

## 6. Random Access Adjustment Mode

In a Standard projector (without the optional linearity adjustments) the Coarse Linearity bar scale will be displayed.

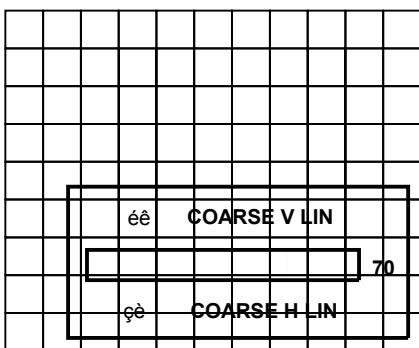
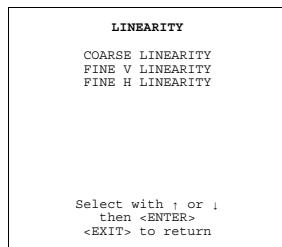


Image 6-31  
Coarse Linearity Adjustment

If the projector is equipped with the optional linearity option, the *Linearity* menu will be displayed.

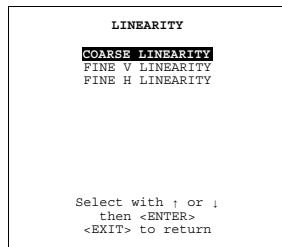


Menu 6-55

### 6.5.9.2 Coarse Linearity

#### How to start up Coarse Linearity?<sup>5</sup>

1. Push the ↑ or ↓ keys to highlight *Coarse Linearity* and press **ENTER** to select.



Menu 6-56

The Coarse Linearity bar scale will be displayed.

#### How to perform a Coarse Linearity Adjustment?

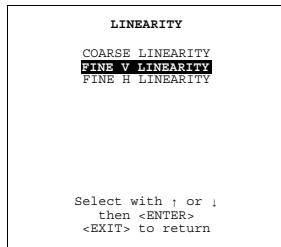
1. Push the ↑ or ↓ keys to adjust the vertical linearity until the distances between the horizontal lines of the set up pattern are equal from top to bottom.
2. Push the ← or → keys to adjust the horizontal linearity until the distances between the vertical lines of the set up pattern are equal from left to right.

5. Only to be done when the projector is equipped with the optional linearity option.

### 6.5.9.3 Fine Vertical Linearity

#### How to adjust the Fine Vertical Linearity?

1. Push the **↑** or **↓** keys to highlight *Fine V Linearity* and press **ENTER** to select.



Menu 6-57

A selection area menu will be displayed.

2. Push the **↑** or **↓** keys to select one of the 9 possible areas and press **ENTER** to confirm.

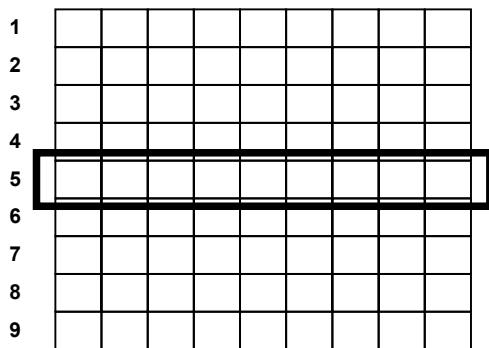


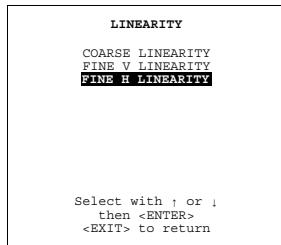
Image 6-32  
Fine Vertical Linearity

3. Use the cursor keys to correct the Vertical Linearity of the image in this specific area.
4. Press **ENTER** to save the correction and to return to the selection screen.
5. Repeat step 2 till 4 for each area that needs an adjustment.
6. Press **EXIT** to return to the *Linearity* menu.

### 6.5.9.4 Fine Horizontal Linearity

#### How to adjust the Fine Horizontal Linearity?

1. Push the **↑** or **↓** keys to highlight *Fine H Linearity* and press **ENTER** to select.



Menu 6-58

2. Push the **↑** or **↓** keys to select one of the 9 possible areas and press **ENTER** to confirm.

## 6. Random Access Adjustment Mode

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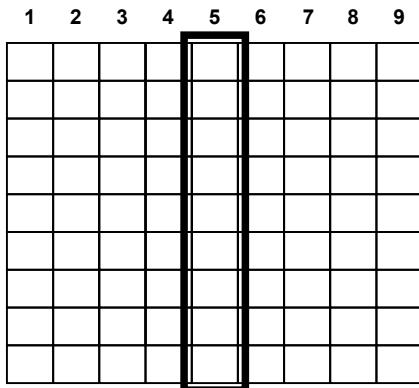


Image 6-33  
Fine Horizontal Linearity

3. Use the cursor keys to correct the Horizontal Linearity of the image in this specific area.
4. Press **ENTER** to save the correction and to return to the selection screen.
5. Repeat step 2 till 4 for each area that needs an adjustment.
6. Press **EXIT** to return to the *Linearity* menu.

### 6.5.10 Blanking Adjustments

#### What can be done?

Blanking adjustments affect only the edges of the projected image and are used to frame the projected image on to the screen and to hide or black out unwanted information.

The following blanking adjustments are available:

- Top.
- Bottom.
- Left.
- Right.

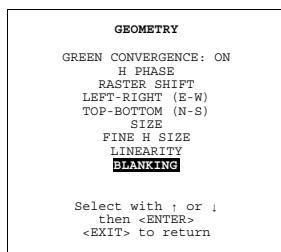


If the internal # pattern was selected, this pattern remains on the screen.

If the genlocked pattern was selected, the external source will be displayed.

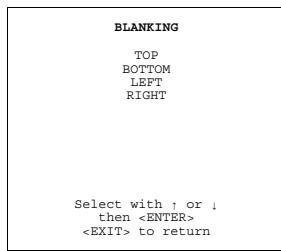
#### How to adjust the Blanking?

1. Push the **↑** or **↓** keys to highlight *Blanking* and press **ENTER** to select.



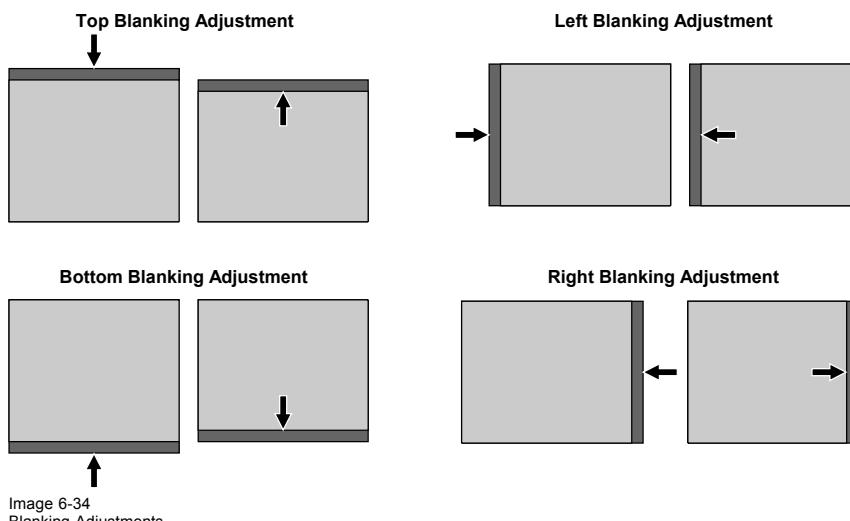
Menu 6-59

The *Blanking* menu will be displayed.



Menu 6-60

2. Push the **↑** or **↓** keys to highlight the desired blanking position and press **ENTER** to select.



3. Push the cursor keys to adjust the blanking and press **ENTER** to confirm.

4. Press **EXIT** to return to the *Geometry* menu.

## 6.6 Convergence

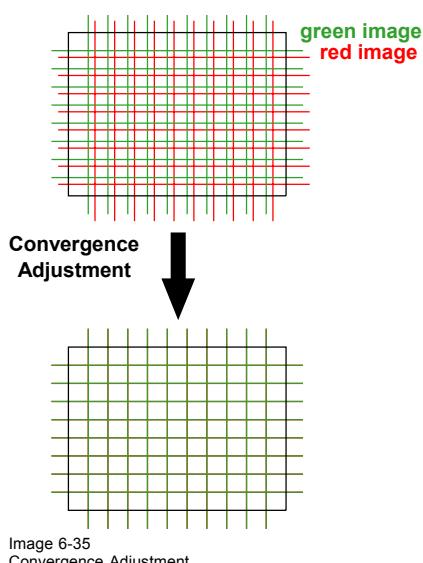
### Overview

- Starting Up Convergence
- Coarse Convergence Adjustment
- Fine Convergence Adjustment

#### 6.6.1 Starting Up Convergence

##### What has to be done?

Convergence adjustments affect both the horizontal and vertical lines of the setup pattern. These adjustments are performed on the green image first, if green convergence is available, until these lines are straight and then on the red image while superimposed on the green image and on the blue image while superimposed on the green image. Adjust the red and blue until they exactly match with the green lines.



##### Adjustment order

Adjust first the coarse adjustment and continue with the fine adjustment.

## 6. Random Access Adjustment Mode

Coarse Adjustment	The screen is divided in 25 areas. By pushing enter the selected area jumps to the next area (auto select).
Fine Adjustment	The screen is divided in 81 (9 x 9) areas with no auto select.

### How to start up Convergence?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight **Convergence** and press **ENTER** to select.

The **Convergence** menu will be displayed.

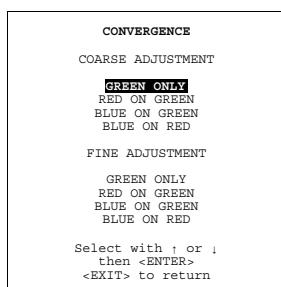
#### 6.6.2 Coarse Convergence Adjustment

##### Adjustment Order

When green convergence is available, start always with 'green only' and continue with 'red on green' and 'blue on green'.

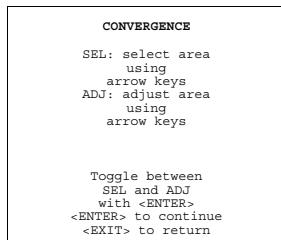
##### How to perform a Coarse Convergence Adjustment?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight **Green Only** within the Coarse Convergence Adjustment and press **ENTER** to select.



Menu 6-61

The **Convergence Selection** menu will be displayed and the screen will be divided in 25 areas.



Menu 6-62

2. Use the cursor keys to select one of the 25 areas and press **ENTER** to confirm and to toggle the cursor keys to the adjustment mode.

**Tip:** For the best result, start by adjusting zone 1 and follow the default order as shown in the image.

<b>25</b>	<b>23</b>	<b>9</b>	<b>15</b>	<b>17</b>
<b>24</b>	<b>22</b>	<b>8</b>	<b>14</b>	<b>16</b>
<b>5</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>20</b>	<b>18</b>	<b>6</b>	<b>10</b>	<b>12</b>
<b>21</b>	<b>19</b>	<b>7</b>	<b>11</b>	<b>13</b>

Image 6-36  
25 Coarse Convergence Areas

3. Use the cursor keys to make horizontal or vertical adjustments in the selected zone.
4. Press **ENTER** to finish convergence adjustment and to toggle the cursor keys to the selection mode.
5. Repeat step 2 till 4 for each area that needs an adjustment.
6. Press **EXIT** to return to the **Convergence**.

7. Repeat the same procedure for Red on Green and Blue on Green.
8. Press **EXIT** to return to the *Random Access Adjustment Mode* menu.

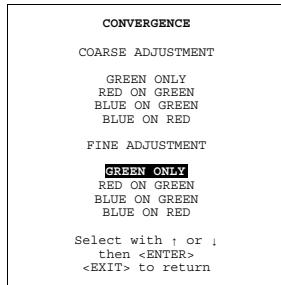
### 6.6.3 Fine Convergence Adjustment

#### What can be done?

The Convergence for 'Green only', if available, and 'Red on Green' and 'Blue on Green' can be adjusted in 81 areas without any influence for another area.

#### How to perform a Fine Convergence Adjustment?

1. Push the **↑** or **↓** keys to highlight *Green Only* within the Fine Convergence Adjustment and press **ENTER** to select.



Menu 6-63

The *Convergence Selection* menu will be displayed and the screen will be divided in 81 areas.

2. Use the cursor keys to select one of the 81 areas and press **ENTER** to confirm and to toggle the cursor keys to the adjustment mode.

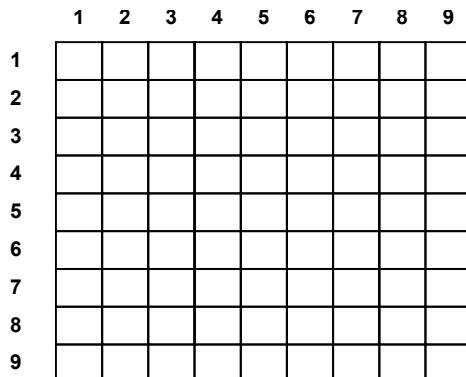


Image 6-37  
81 Fine Convergence Areas

3. Use the cursor keys to make horizontal or vertical adjustments in the selected area.
4. Press **ENTER** to finish convergence adjustment and to toggle the cursor keys to the selection mode.
5. Repeat step 2 till 4 for each area that needs an adjustment
6. Press **EXIT** to return to the *Convergence* menu when the convergence for that item is finished.
7. Repeat the same procedure for Red on Green and Blue on Green.
8. Press **EXIT** to return to the *Random Access Adjustment Mode* menu.

## 6.7 Focusing

### Overview

- Starting Up Focusing
- Midpoint focusing
- Top image focusing
- Bottom image focusing
- Digital Adjustment
- Blue On Source

#### 6.7.1 Starting Up Focusing

##### What has to be done?

After mechanical lens focusing the electromagnetic focus can be adjusted, the electromagnetic focus will focus the image in every spot on the CRT faceplate.

The focusing has to be done for the three colors separately, start with Green and continue with Red and Blue.

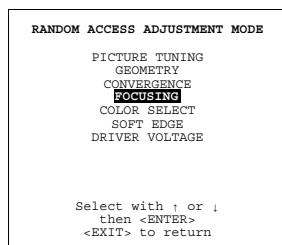
The following items can be adjusted for each color:

- Midpoint Focusing.
- Top Image Focusing.
- Bottom Image Focusing.
- Digital Adjustment.

For the digital adjustment, the screen is divided into 25 areas which can be selected with a Select Area menu.

##### How to start up Focusing?

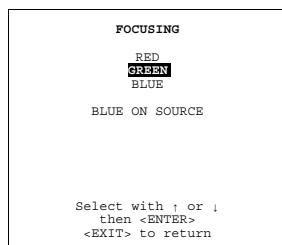
1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Focusing* and press **ENTER** to select.



Menu 6-64

The *Focusing* menu will be displayed.

2. Start the following procedures (Midpoint, Top, Bottom and Digital Adjustment Focusing) with Green and when finished continue with Red and Blue, push the  $\uparrow$  or  $\downarrow$  keys to highlight *Green* and press **ENTER** to select.



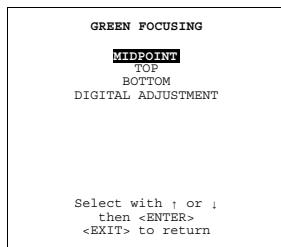
Menu 6-65

The *Green Focusing* menu will be displayed.

## 6.7.2 Midpoint focusing

### How to focus the Midpoint?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Midpoint* and press **ENTER** to select.



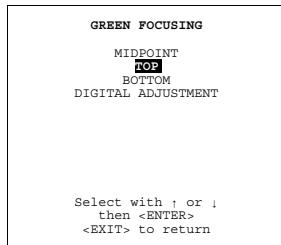
Menu 6-66

2. Push the cursor keys until the center of the image is sharp.
3. Press **ENTER** to return to the *Focusing* menu.

## 6.7.3 Top image focusing

### How to focus the Top of the image?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Top* and press **ENTER** to select.



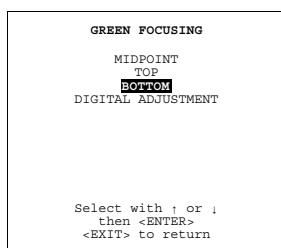
Menu 6-67

2. Push the cursor keys until the upper part of the image is sharp.
3. Press **ENTER** to return to the *Focusing* menu.

## 6.7.4 Bottom image focusing

### How to focus the Bottom of the image?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Bottom* and press **ENTER** to select.



Menu 6-68

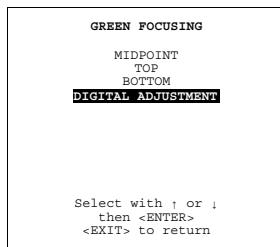
2. Push the cursor keys until the lower part of the image is sharp.
3. Press **ENTER** to return to the *Focusing* menu.

## 6. Random Access Adjustment Mode

### 6.7.5 Digital Adjustment

#### How to perform a Digital Adjustment?

1. Push the **↑** or **↓** keys to highlight *Digital Adjustment* and press **ENTER** to select.



Menu 6-69

The *Selection* menu will be displayed and the screen will be divided in 25 areas.

2. Use the cursor keys to select one of the 25 areas and press **ENTER** to confirm and to toggle the cursor keys to the adjustment mode.

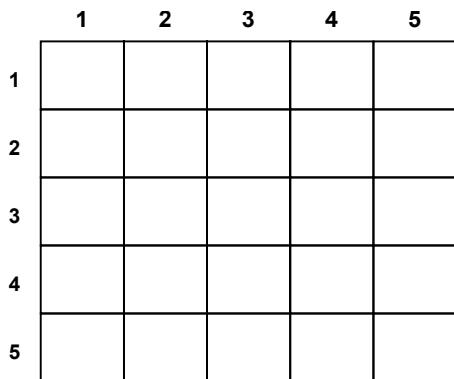


Image 6-38  
25 Digital Adjustment Areas

3. Use the cursor keys to focus the image in the selected area.
4. Press **ENTER** to finish the digital focus adjustment and to toggle the cursor keys to the selection mode.
5. Repeat step 2 till 4 for each area that needs an adjustment.
6. When finished press **EXIT** to return to the *Focusing* menu.

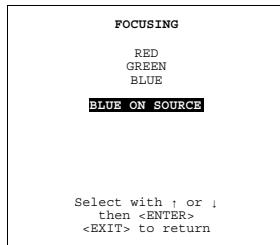
### 6.7.6 Blue On Source

#### What has to be done?

After focusing the three colors, a discoloring on a full white image is still visible, this can be corrected using the Blue On Source Adjustment.

#### How to adjust Blue On Source?

1. Push the **↑** or **↓** keys to highlight *Blue On Source* and press **ENTER** to select.



Menu 6-70

2. Repeat the procedures mentioned above (Midpoint, Top, Bottom and Digital Adjustment Focusing) to improve white uniformity.
3. Keep pressing **EXIT** until the *Random Access Adjustment Mode* menu is displayed.

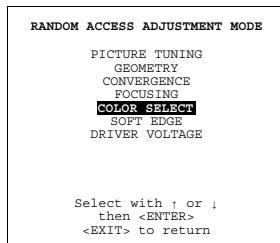
## 6.8 Color Select

### What can be done?

Only one color (CRT) or a combination of colors can be switched on to display the image.

### How to use Color Select?

1. Push the **↑** or **↓** keys to highlight *Color Select* and press **ENTER** to select.



Menu 6-71

The *Color Select* menu will be displayed.

2. Push the **↑** or **↓** keys to highlight the desired color or color combination and press **ENTER** to select.

Only the chosen color or color combination will be displayed.

3. Press **EXIT** to return to the *Random Access Adjustment Mode* menu.

## 6.9 Soft Edge (Optional)

### When available?

Only available as an option, for more explanation see SEMU manual.

## 6.10 Driver Voltage (Optional)

### When available?

Only available as an option.

### What can be done?

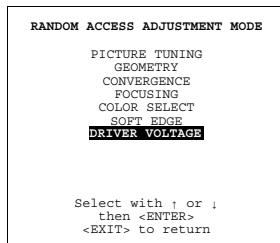
The voltage for the convergence and focus outputs that is tracked with the line frequency, can be extra turned up or down depending on the projected image.



This voltage should be kept as low as possible to avoid extra dissipation inside the projector.

### How to adjust the Driver Voltage?

1. Push the **↑** or **↓** keys to highlight *Driver Voltage* and press **ENTER** to select.



Menu 6-72

## 6. Random Access Adjustment Mode

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The Driver Voltage bar scale will be displayed.

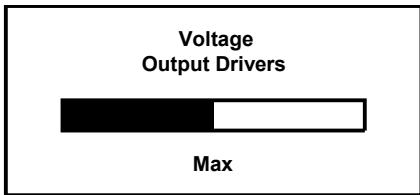


Image 6-39  
Driver Voltage bar scale

2. Was it possible to perfectly adjust the Convergence (No Hooking)?  
If yes, Use the cursor keys to turn back the Driver Voltage until there is just no distortion visible on the screen.

The dissipation inside the projector will be reduced.

If no, Use the cursor keys to drive up the Driver Voltage a little and try again to converge the image, repeat this step if necessary.

*Tip: Do not exaggerate as the dissipation inside the projector will increase too.*

3. Press **EXIT** to return to the *Random Access Adjustment Mode* menu.

# 7. SERVICE MODE

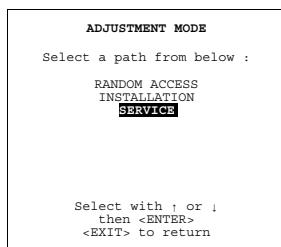
## Overview

- Introduction
- Service Mode Overview
- Projector Set-Up
- Memory Management
- Common Settings
- I2C Diagnostics
- Voltage Diagnostics
- Projector Diagnostics

## 7.1 Introduction

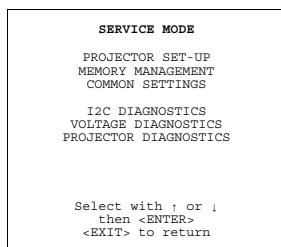
### How to start up Service Mode?

1. Press the **ADJUST** key to start up the Adjustment Mode.  
The main *Adjustment Mode* menu will be displayed.
2. Push the  $\uparrow$  or  $\downarrow$  keys to highlight **Service** and press **ENTER** to select.



Menu 7-1

The Service menu will be displayed.



Menu 7-2



Some items in the Service mode are password protected (when the password function is active). Enter your password to continue. All other password protected items are now also available if you stay in the adjustment mode.

## 7.2 Service Mode Overview

---

### Service Mode Overview

- Projector Set Up
  - Identification
  - Total Run Time
  - Change Password
  - Change Projector Address
  - Change Baudrate
  - Projector Warm Up
  - Power Up Mode
  - Common Address
  - ABL Controller
- Memory Management
  - Copy a Block
  - Copy Soft Edge Block
  - Delete a Block
  - Deletion All Blocks
  - Set to Midposition
- Common Settings
  - Dynamic Astigmatism
  - Gamma Correction
  - CRT Run In Cycle
  - CRT Drive Mode
  - Memorybanks
  - Flyback Turnover Point
  - Menu Position
  - option 1
  - Real Time Clock
- I<sup>2</sup>C Diagnostics
- Voltage Diagnostics
- Projector Diagnostics

## 7.3 Projector Set-Up

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### Overview

- Starting Up Projector Set-Up
- Identification
- Total Run Time
- Change Password
- Change Projector Address
- Change Baudrate
- Projector Warm Up
- Power Up Mode Operating/Stand-By
- Common Address
- ABL Controller

### 7.3.1 Starting Up Projector Set-Up

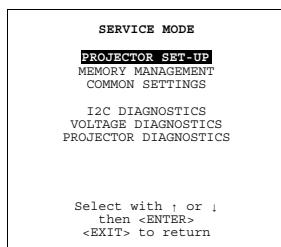
#### What can be done?

Within the projector set-up menu, the following items can be consulted or set to the desired setting:

- Identification.
- Total Run Time.
- Change Password.
- Change Projector Address.
- Change Baudrate.
- Projector Warm Up.
- Power Up Mode.
- Common Address.

#### Projector Set-Up

1. Push the **↑** or **↓** keys to highlight *Projector Set-Up* and press **ENTER** to select.



Menu 7-3

The *Projector Set-Up* menu will be displayed.

### 7.3.2 Identification

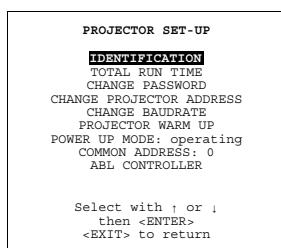
#### What can be seen?

The Identification screen gives information concerning:

- Projector address, to change the address of your projector, contact a qualified service technician.
- Software version.
- Configuration, possible installations: Front-ceiling, Front-table, Rear-ceiling, Rear-table.
- Baud rate PC: transfer speed for communication with an IBM PC (or compatible) or MAC. The baud rate of the projector must be the same as the baud rate of the connected computer. When there is a difference, contact a qualified service technician to make the appropriate changes.
- Text On/Off: indicates in operational mode if the bar scale and number indicator will be displayed and if warnings and failures will be displayed (ON: displayed, OFF: not displayed). The status can be changed by pressing the **TEXT** key once on the RCU.
- Serial No.: indicates the fabrication number of the projector. This number can be useful when calling for technical assistance.

#### How to start up Identification?

1. Push the **↑** or **↓** keys to highlight *Identification* and press **ENTER** to select.

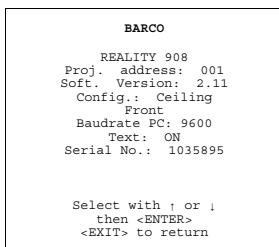


Menu 7-4

## 7. Service Mode

---

The Identification screen will be displayed.



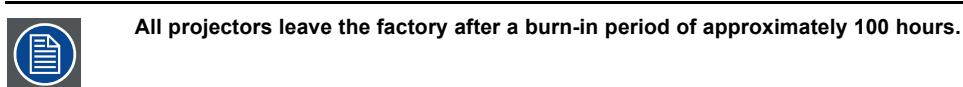
Menu 7-5

2. Press **EXIT** to return to the *Projector Set-Up* menu.

### 7.3.3 Total Run Time

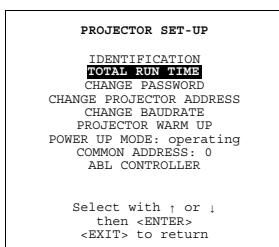
#### What can be seen?

The total system run time since the first start up can be displayed plus the run time of the separate CRT's since the last reset.



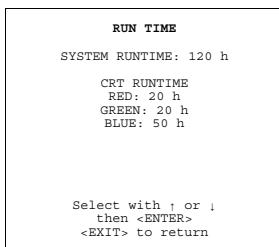
#### How to start up Total Run Time?

1. Push the ↑ or ↓ keys to highlight *Total Run Time* and press **ENTER** to select.



Menu 7-6

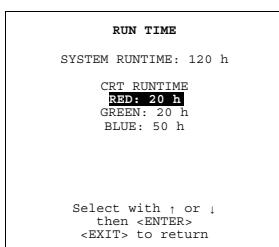
The Total Run Time screen will be displayed, the System Runtime indicates the amount of time the projector has played since its first start up at the factory, the CRT run times will be displayed next to the respective colors.



Menu 7-7

#### How to reset CRT Run Time?

1. Push the ↑ or ↓ keys to highlight the desired CRT e.g. Red, for which the Run Time has to be reseted.



Menu 7-8

2. Press **ENTER** to reset the Run Time.
3. Press **EXIT** to return to the *Projector Set-Up* menu.

### 7.3.4 Change Password

#### What can be done?

The password code (4 digits) can be changed to a new one. This item is password protected. First the actual password should be entered before continuing.

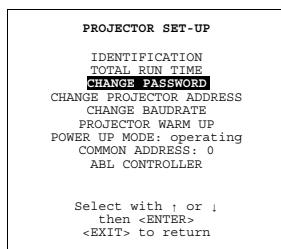


**Password function is only active if the jumper on the controller is in the 'On' position. Contact a qualified BARCO technician to activate the password if needed.**

**The default password is 0000.**

#### How to Change the Password?

1. Push the **↑** or **↓** keys to highlight *Change Password* and press **ENTER** to select.



Menu 7-9

**Note:** If it is the first time you enter a password protected item, enter your password and press **ENTER**.

The current Password will be displayed in the *Password* menu.



Menu 7-10

2. Push the **←** or **→** keys to highlight the digit to be changed.
3. Press a numeric key to enter the new digit.
4. Repeat step 2 till 3 for the other digits.
5. Press **ENTER** to save the new password.

Before saving the new password, a confirmation screen will be displayed.

6. Press **ENTER** to confirm, press **EXIT** to cancel the saving.

### 7.3.5 Change Projector Address

#### What can be done?

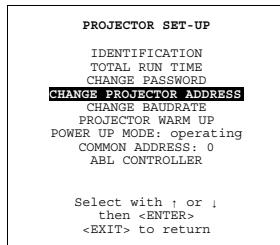
Every projector requires an individual address between 0 and 255. This address can be set by the software.

## 7. Service Mode

---

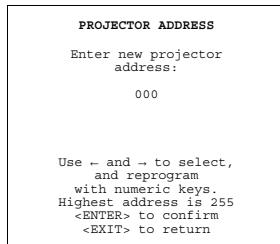
### How to Change the Projector Address?

1. Push the **↑** or **↓** keys to highlight *Change Projector Password* and press **ENTER** to select.



Menu 7-11

The current Projector Address will be displayed in the *Projector Password* menu.



Menu 7-12

2. Push the **←** or **→** keys to highlight the digit to be changed.
3. Press a numeric key to enter the new digit.
4. Repeat step 2 till 3 for the other digits.
5. Press **ENTER** to save the new password.

### 7.3.6 Change Baudrate

#### What can be done?

The communication speed between projector and computer has 8 possible speeds. The baud rate speed can be software set up.

The following baud rates are available:

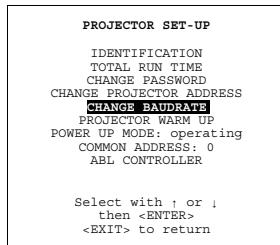
- 38400
- 19200
- 9600
- 4800
- 2400
- 1200



By default the Baudrate is set to 9600.

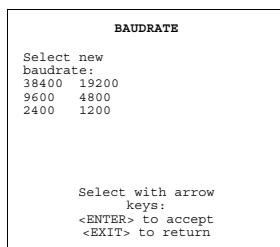
### How to Change the Baudrate?

1. Push the **↑** or **↓** keys to highlight *Change Baudrate* and press **ENTER** to select.



Menu 7-13

The **Baudrate** menu will be displayed, the actual Baudrate will be highlighted.



Menu 7-14

2. Push the **↑** or **↓** keys to highlight the desired Baudrate and press **ENTER** to confirm.
3. Press **EXIT** to return to the *Projector Set-Up* menu.

### 7.3.7 Projector Warm Up

#### Overview

- Starting Up Projector Warm Up
- Warm Up On/Off
- Warm Up Frequency
- Warm Up Time

#### 7.3.7.1 Starting Up Projector Warm Up

##### Why a projector Warm Up?

To perform in optimum conditions the projector needs to be warmed up.

##### What is done during the Warm Up period?

When in the Warm Up mode is set to On (and the CRT run in cycle is Off) the projector starts up with a warm up period, a warm up menu will be displayed, this menu offers the possibility to skip the warm up period by pressing the **EXIT** key and offers the possibility to adjust the horizontal and vertical amplitude of this white image with the cursor keys. During this warm up period, a full white image is shifted on the CRT faceplate to avoid a burn in. Every 30 seconds a text box will be displayed in another place on the screen with the remaining time to go.

When **EXIT** is pressed during this warm up period, the warm up menu will be redisplayed with the remaining time indication. Press another time **EXIT** to interrupt the warm up cycle.

##### Which Warm Up settings can be adjusted?

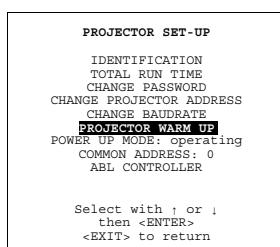
The projector will start up with a warm up period to perform in optimum conditions.

Following warm up settings can be adjusted:

- Warm Up Mode On/Off.
- Warm Up Frequency of the warm up source.
- Warm Up Time.

##### How to start up Projector Warm Up settings?

1. Push the **↑** or **↓** keys to highlight *Projector Warm Up* and press **ENTER** to select.



Menu 7-15

The *Projector Warm Up* menu will be displayed.

## 7. Service Mode

### 7.3.7.2 Warm Up On/Off

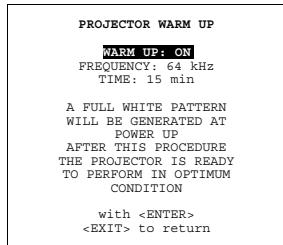
#### What can be done?

The Warm Up period can be set On or Off.

On	When starting the projector, the warm up period will be executed, during this warm up period a full white image is projected
Off	The projector starts up with immediate image projection.

#### How to toggle Warm Up On/Off?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Warm Up On/Off*.



Menu 7-16

2. Press **ENTER** to toggle *Warm Up On/Off*.

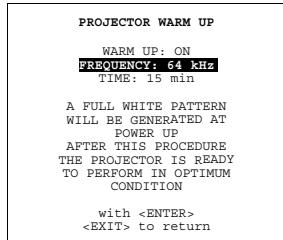
### 7.3.7.3 Warm Up Frequency

#### What can be done?

The line frequency of the white pattern on which the warm up will be executed, can be entered by selecting out of the displayed list an available block.

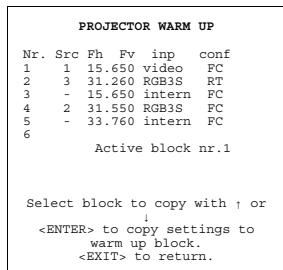
#### How to set the Warm Up Frequency?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Frequency* and press **ENTER** to select.



Menu 7-17

The *Projector Warm Up Frequency* menu will be displayed.



Menu 7-18

2. Push the  $\uparrow$  or  $\downarrow$  keys to highlight a Warm Up Block.
3. Press **ENTER** to copy the settings of the selected block to the warm up block.
4. Press **EXIT** to return to the *Projector Warm Up* menu.

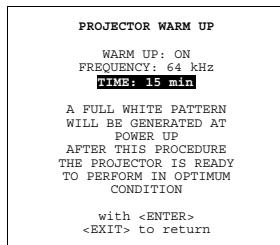
### 7.3.7.4 Warm Up Time

#### What can be done?

The Warm Up Time can be programmed with the cursor keys.

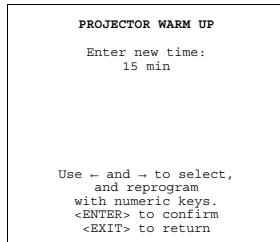
#### How to set the Warm Up Time?

- Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Time* and press **ENTER** to select.



Menu 7-19

The *Projector Warm Up Time* menu will be displayed, the actual warm up time will be displayed.



Menu 7-20

- Push the  $\leftarrow$  or  $\rightarrow$  keys to highlight the digit to be changed.
- Press a numeric key to enter the new digit.
- Repeat step 2 till 3 for the other digits.
- Press **ENTER** to save the new Warm Up Time.
- Press **EXIT** to return to the *Projector Set-Up* menu.

### 7.3.8 Power Up Mode Operating/Stand-By

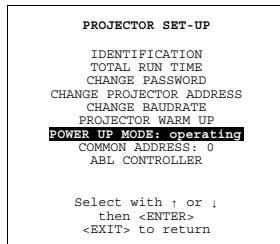
#### What can be done?

When pressing the power switch, the projector can start up in 'operating mode' or in 'stand-by mode'.

Operating	The projector start up and displays image.
Stand-By	The projector start up in stand-by and waits until the stand-by button or a digit key is pressed

#### How to toggle Power Up Mode Operating/Stand By?

- Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Power Up Mode* and press **ENTER** to select.



Menu 7-21

### 7.3.9 Common Address

#### What can be done?

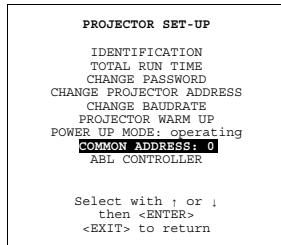
Every projector listens to a common address. This common address can be set to '0' or '1'. When a RCU is programmed with that common address, every projector with that same common address will follow up the commands given by that RCU.

#### Why 2 different Common Addresses?

The reason to have the choice to select between common addresses is, to avoid controlling of other IR controlled units, e.g. a TV set with standard common address 0.

#### How to change the Common Address?

1. Push the **↑** or **↓** keys to highlight *Common Address*.



Menu 7-22

2. Press **ENTER** to toggle the Common Address between '0' and '1'.
3. Press **EXIT** to return to the *Service Mode* menu.

### 7.3.10 ABL Controller

#### What can be done?

To guarantee perfect dark images in e.g. night scene simulations the ABL control can be switched from a 'continues' control, in sync with the vertical refresh rate of the projected image, to a 'forced' control according to a programmable ABL timer setting.

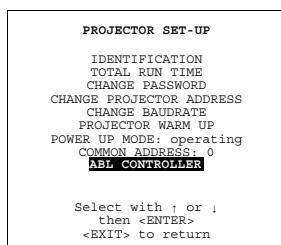


When starting up the projector, the first 20 minutes the ABL control will always run in a 'continues startup' mode.

---

#### How to change the ABL Control mode?

1. Push the **↑** or **↓** keys to highlight *ABL Controller*.

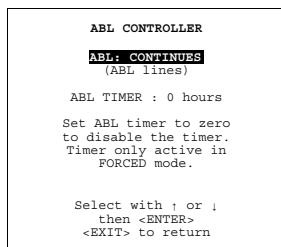


Menu 7-23

2. Press **ENTER** to select.

The *ABL Controller* menu will be displayed.

3. Push the **↑** or **↓** keys to highlight *ABL: Continues*.



Menu 7-24

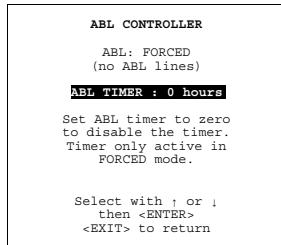
4. Press **ENTER** to toggle between the ABL modes:

Continues	The ABL is measured in sync with the vertical refresh rate of the projected image
Forced	ABL is measured according to the ABL timer setting

### How to set the ABL Timer?

The ABL Timer is only active in 'Forced' mode

1. Push the **↑** or **↓** keys to highlight *ABL Timer*.

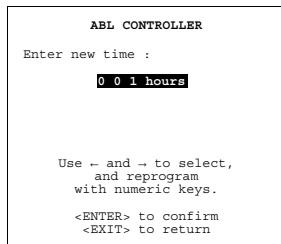


Menu 7-25

2. Press **ENTER** to select.

The *ABL Timer* menu will be displayed.

3. Push the **←**, **→** and numeric keys to set the ABL Timer.



Menu 7-26

**Note:** ABL can also be controlled by a PC through RS232, in this case the ABL Timer is disabled by setting the ABL timer to zero.

4. Press **ENTER** to confirm.
5. Press **EXIT** to return to the *ABL Controller* menu.
6. Press **EXIT** to return to the *Service Mode* menu.

## 7.4 Memory Management

### Overview

- Starting Up Memory Management
- Copy a Block
- Copy Soft Edge Block
- Delete a Block
- Delete All Blocks
- Set to Midposition

### 7.4.1 Starting Up Memory Management

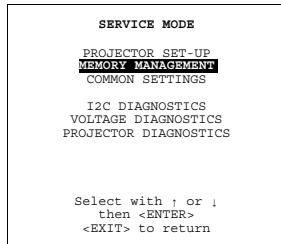
#### What can be done?

Within the Memory Management menu, the following items can be consulted or executed:

- Copy a Block.
- Copy Soft Edge Block.
- Delete a Block.
- Delete all Blocks.
- Set to Midposition.

#### How to start up the Memory Management?

1. Push the **↑** or **↓** keys to highlight *Memory Management* and press **ENTER** to select.



Menu 7-27

The *Memory Management* menu will be displayed.

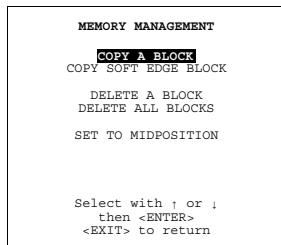
### 7.4.2 Copy a Block

#### What can be done?

This will copy the settings of the selected block into the active block.

#### How to Copy a Block?

1. Push the **↑** or **↓** keys to highlight *Copy a Block* and press **ENTER** to select.



Menu 7-28

The *Copy Mode* menu will be displayed.

2. Push the **↑** or **↓** keys to select a block.
3. Press **ENTER** to copy the settings of the selected block to the active block you are working on.  
*Note:* All current settings will be overwritten with the settings of the block which is copied.

A confirmation screen will be displayed.

4. Press **ENTER** to confirm, press **EXIT** to cancel the saving.

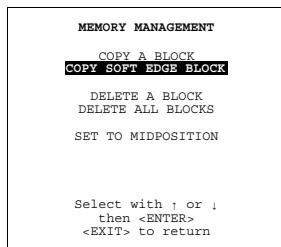
### 7.4.3 Copy Soft Edge Block

#### What can be done?

This will copy the softedge settings of the selected block into the softedge settings of the active block.

#### How to Copy a Soft Edge Block?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Copy Soft Edge Block* and press **ENTER** to select.



Menu 7-29

The *Copy Softedge Mode* menu will be displayed.

2. Push the  $\uparrow$  or  $\downarrow$  keys to select a block.
3. Press **ENTER** to copy the softedge settings of the selected block to the softedge settings of the active block you are working on.  
**Note:** All current softedge settings will be overwritten with the softedge settings of the block which is copied.
4. A confirmation screen will be displayed.

4. Press **ENTER** to confirm, press **EXIT** to cancel the saving.

### 7.4.4 Delete a Block



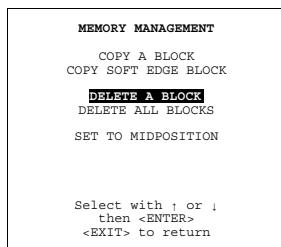
This item is password protected.

#### What can be done?

This will delete the selected block.

#### How to Delete a Block?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Delete a Block* and press **ENTER** to select.



Menu 7-30

The *Delete a Block* menu will be displayed.

2. Push the  $\uparrow$  or  $\downarrow$  keys to select a block.
3. Press **ENTER** to delete the selected block.
4. A confirmation screen will be displayed.

4. Press **ENTER** to confirm, press **EXIT** to cancel the deletion.

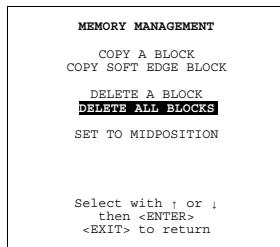
### 7.4.5 Delete All Blocks

#### What can be done?

This will delete all blocks.

#### How to Delete All Blocks?

1. Push the **↑** or **↓** keys to highlight *Delete All Blocks*.



Menu 7-31

2. Press **ENTER** to delete all blocks.

A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the deletion.

### 7.4.6 Set to Midposition

#### Overview

- Starting up Set to Midposition
- R&B Convergence Midposition
- Green Convergence Midposition
- Focus to Midposition
- East-West to Midposition
- North-South to Midposition
- Digital Vertical Linearity Midposition
- Digital Horizontal Linearity Midposition
- Astigmatism Midposition
- All Settings to Midposition

#### 7.4.6.1 Starting up Set to Midposition

#### What can be done?

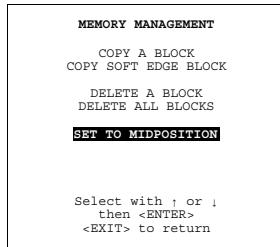
All geometry and convergence adjustment settings can be set to mid position.



This item is password protected.

#### How to start up Set to Midposition?

1. Push the **↑** or **↓** keys to highlight *Set to Midposition* and press **ENTER** to select.



Menu 7-32

The *Set to Midposition* menu will be displayed.

### 7.4.6.2 R&B Convergence Midposition

#### What can be done?

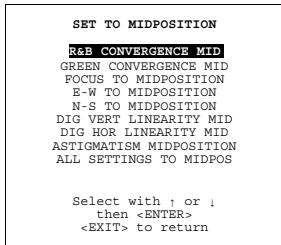
All convergence settings for Red and Blue can be set to midposition.



This item is password protected.

#### How to set R&B Convergence to Midposition?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *R&B Convergence Mid*.



Menu 7-33

2. Press **ENTER** to set the Red and Blue Convergence settings to midposition.

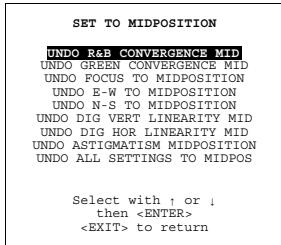
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

#### How to Undo R&B Convergence to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. *Undo R&B Convergence Mid* is displayed in stead off *R&B Convergence Mid*.

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Undo R&B Convergence Mid*.



Menu 7-34

2. Press **ENTER** to reset the Red and Blue Convergence settings to the previous settings.

### 7.4.6.3 Green Convergence Midposition



Only available when the projector is equipped with the green convergence adjustments.

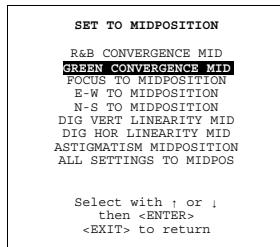
#### What can be done?

All Green convergence settings can be set to midposition.

## 7. Service Mode

### How to set Green Convergence to Midposition?

1. Push the **↑** or **↓** keys to highlight *Green Convergence Mid*.



Menu 7-35

2. Press **ENTER** to set the Green Convergence settings to midposition.

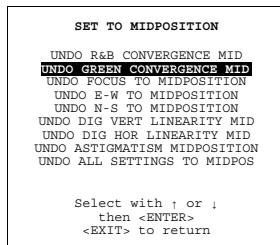
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

### How to Undo Green Convergence to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. *Undo Green Convergence Mid* is displayed in stead off *Green Convergence Mid*.

1. Push the **↑** or **↓** keys to highlight *Undo Green Convergence Mid*.



Menu 7-36

2. Press **ENTER** to reset the Green Convergence settings to the previous settings.

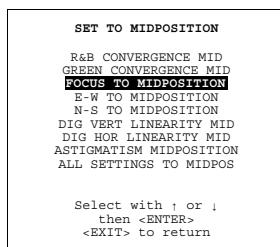
#### 7.4.6.4 Focus to Midposition

##### What can be done?

The focus settings can be set to midposition.

### How to set Focus to Midposition?

1. Push the **↑** or **↓** keys to highlight *Focus to Midposition*.



Menu 7-37

2. Press **ENTER** to set the Focus settings to midposition.

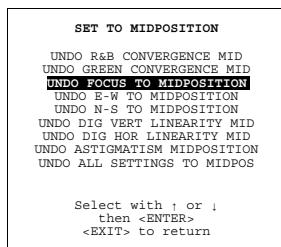
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

## How to Undo Focus to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. *Undo Focus to Midposition* is displayed in stead off *Focus to Midposition*.

1. Push the **↑** or **↓** keys to highlight *Undo Focus to Midposition*.



Menu 7-38

2. Press **ENTER** to reset the Focus settings to the previous settings.

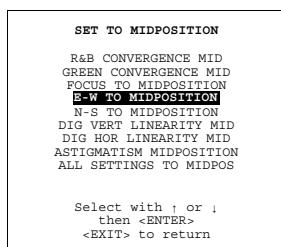
### 7.4.6.5 East-West to Midposition

#### What can be done?

The East-West settings can be set to midposition.

#### How to set East-West to Midposition?

1. Push the **↑** or **↓** keys to highlight *East-West to Midposition*.



Menu 7-39

2. Press **ENTER** to set the East-West settings to midposition.

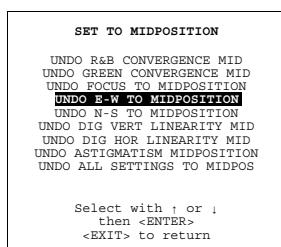
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

#### How to Undo East-West to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. *Undo E-W to Midposition* is displayed in stead off *E-W to Midposition*.

1. Push the **↑** or **↓** keys to highlight *Undo E-W to Midposition*.



Menu 7-40

2. Press **ENTER** to reset the East-West settings to the previous settings.

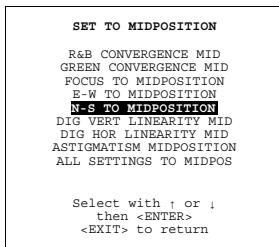
### 7.4.6.6 North-South to Midposition

#### What can be done?

The East-West settings can be set to midposition.

#### How to set North-South to Midposition?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *N-S to Midposition*.



Menu 7-41

2. Press **ENTER** to set the North-South settings to midposition.

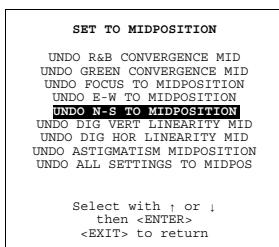
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

#### How to Undo North-South to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. *Undo N-S to Midposition* is displayed in stead off *N-S to Midposition*.

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Undo N-S to Midposition*.



Menu 7-42

2. Press **ENTER** to reset the North-South settings to the previous settings.

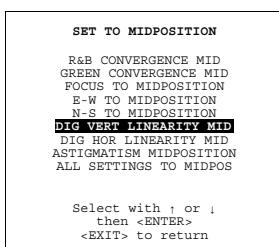
### 7.4.6.7 Digital Vertical Linearity Midposition

#### What can be done?

The Digital Vertical Linearity settings for the different areas can be set to their midposition.

#### How to set Digital Vertical Linearity to Midposition?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Dig Vert Linearity Mid*.



Menu 7-43

2. Press **ENTER** to set the Digital Vertical Linearity settings to midposition.

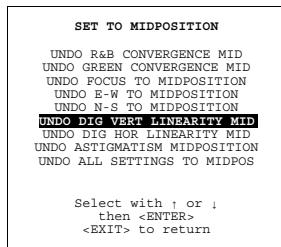
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

## How to Undo Digital Vertical Linearity to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. *Undo Dig Vert Linearity Mid* is displayed in stead off *Dig Vert Linearity Mid*.

1. Push the **↑** or **↓** keys to highlight *Undo Dig Vertical Linearity Mid*.



Menu 7-44

2. Press **ENTER** to reset the Digital Vertical Linearity settings to the previous settings.

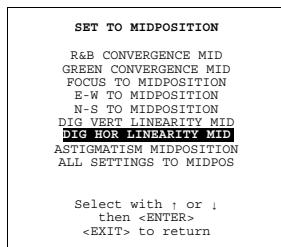
### 7.4.6.8 Digital Horizontal Linearity Midposition

#### What can be done?

The Digital Horizontal Linearity settings for the different areas can be set to their midposition.

#### How to set Digital Horizontal Linearity to Midposition?

1. Push the **↑** or **↓** keys to highlight *Dig Hor Linearity Mid*.



Menu 7-45

2. Press **ENTER** to set the Digital Horizontal Linearity settings to midposition.

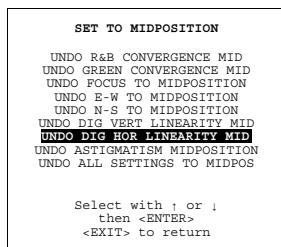
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

#### How to Undo Digital Horizontal Linearity to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. *Undo Dig Hor Linearity Mid* is displayed in stead off *Dig Hor Linearity Mid*.

1. Push the **↑** or **↓** keys to highlight *Undo Dig Hor Linearity Mid*.



Menu 7-46

2. Press **ENTER** to reset the Digital Horizontal Linearity settings to the previous settings.

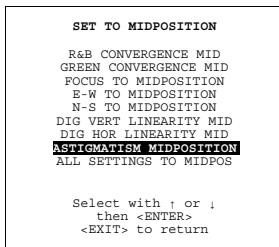
### 7.4.6.9 Astigmatism Midposition

#### What can be done?

The Astigmatism settings for the different areas can be set to their midposition.

#### How to set Astigmatism to Midposition?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight **Astigmatism Midposition**.



Menu 7-47

2. Press **ENTER** to set the Astigmatism settings to midposition.

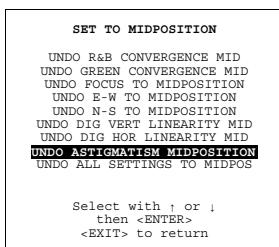
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

#### How to Undo Astigmatism to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. **Undo Astigmatism Midposition** is displayed in stead off **Astigmatism Midposition**.

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight **Undo Astigmatism Midposition**.



Menu 7-48

2. Press **ENTER** to reset the Astigmatism settings to the previous settings.

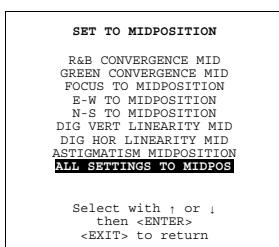
### 7.4.6.10 All Settings to Midposition

#### What can be done?

All *Set to Midposition* menu settings can be set to their midposition.

#### How to set All Settings to Midposition?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight **All Settings to Midposition**.



Menu 7-49

2. Press **ENTER** to set all *Set to Midposition* menu settings to midposition.

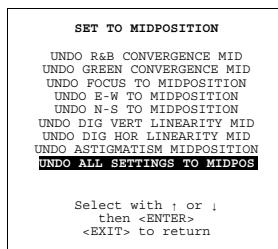
A confirmation screen will be displayed.

3. Press **ENTER** to confirm, press **EXIT** to cancel the reset.

## How to Undo All Settings to Midposition?

As long as the projector is playing on the same source (= same adjustment block) it is possible to return to the previous settings. *Undo All Settings To Midpos* is displayed instead of *All Settings To Midpos*.

1. Push the **↑** or **↓** keys to highlight *Undo All Settings To Midpos*



Menu 7-50

2. Press **ENTER** to reset all *Set to Midposition* menu settings to the previous settings.

## 7.5 Common Settings

### Overview

- Starting Up Common Settings
- Dynamic Astigmatism
- Gamma Corrections
- CRT Run In Cycle
- CRT Drive Mode
- Memory Banks
- Flyback Turnover Point
- Menu Position
- Option 1
- Real Time Clock

### 7.5.1 Starting Up Common Settings

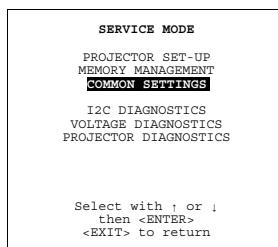
#### What can be done?

Within the common settings menu, the following items can be set up or executed:

- Dynamic Astigmatism.
- Gamma Correction.
- CRT Run In Cycle.
- CRT Drive mode.
- Memory Banks: On/Off.
- Flyback Turnover Point.
- Menu Position : Standard/Middle

#### How to start up Common Settings?

1. Push the **↑** or **↓** keys to highlight *Common Settings* and press **ENTER** to select.



Menu 7-51

The *Common Settings* menu will be displayed.

### 7.5.2 Dynamic Astigmatism

#### What can be done?

The Dynamic Astigmatism adjustments correct the spot shape until it is circular, this can be done in 25 different areas on the screen.

This adjustment is done for the three colors separately.

The spot shape is adjusted according to the axial axes and the diagonal axes when using the cursor keys on the RCU.

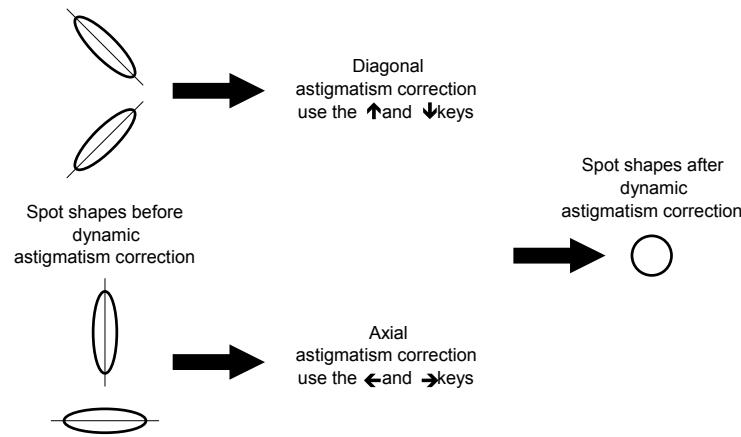


Image 7-1  
Dynamic Astigmatism

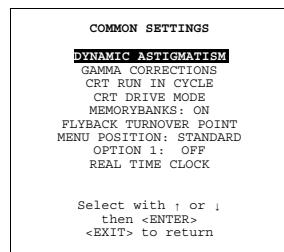
These adjustments are done for each color separately on the selected source or on a dot pattern lock on the selected source (gen-locked pattern).

#### Preparation

1. Press the **+** Contrast Control key to increase the Contrast Level to near maximum.
2. Press the **-** Sharpness key to defocus the image until the dots are large and easily visible.

#### How to start up Dynamic Astigmatism?

1. Push the **↑** or **↓** keys to highlight *Dynamic Astigmatism* and press **ENTER** to select.



Menu 7-52

The *Dynamic Astigmatism* menu will be displayed.

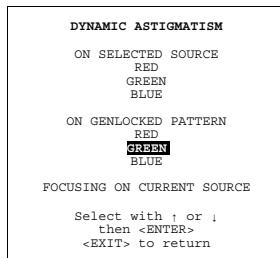
2. Push the **↑** or **↓** keys to highlight *Dynamic Astigmatism* and press **ENTER** to select.

The *Dynamic Astigmatism* menu will be displayed.

## How to adjust Dynamic Astigmatism?

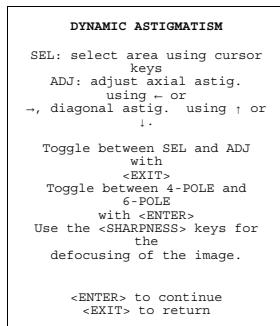
The following procedure is described for adjusting e.g. the Green color when using a Gelocked Pattern, repeat this procedure for each color:

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight the desired color e.g. Green on a Genlocked Pattern.



Menu 7-53

The *Dynamic Astigmatism* adjustment menu will be displayed and the screen is divided in 25 areas.



Menu 7-54

2. Use the cursor keys to select one of the 25 areas and press **ENTER** to confirm and to toggle the cursor keys to the adjustment mode.

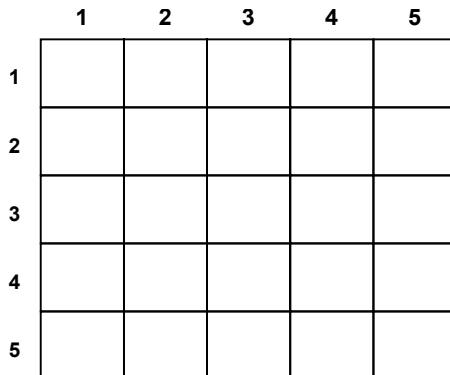


Image 7-2  
25 Dynamic Astigmatism Areas

Start by adjusting the 4 pole correction until the spot is circular:

- Push the  $\uparrow$  or  $\downarrow$  keys for the diagonal astigmatism adjustment.
- Push the  $\leftarrow$  or  $\rightarrow$  keys for the axial astigmatism adjustment.

3. Press **ENTER** to toggle the 4 pole correction to the 6 pole correction (and back).

Continue by adjusting the 6 pole correction until the spot is circular:

- Push the  $\uparrow$  or  $\downarrow$  keys for the diagonal astigmatism adjustment.
- Push the  $\leftarrow$  or  $\rightarrow$  keys for the axial astigmatism adjustment.

4. Press **EXIT** to return to the area selection mode.

5. Repeat step 2 till 6 for each area that needs an adjustment.

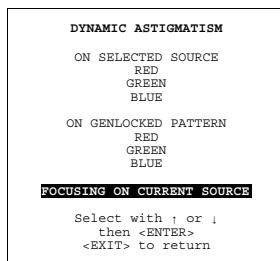
## 7. Service Mode

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### Focusing On Current Source

When selecting this function, the *Focus* menus from Random Access Adjustment Mode will be displayed.

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Focusing On Current Source* and press **ENTER** to select.



Menu 7-55

the *Focus* menus from Random Access Adjustment Mode are displayed.

### 7.5.3 Gamma Corrections



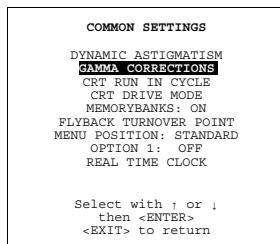
**WARNING:** The Gamma Corrections are factory adjusted using an ACTAS color analyser! Therefore, only qualified installation or service personnel should perform these adjustments!

#### What can be done?

This will adjust the Gamma settings of the projector.

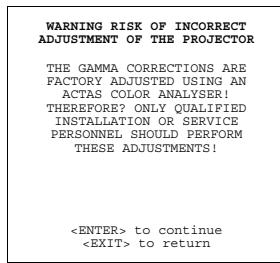
#### How to perform a Gamma Corrections?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Gamma Corrections* and press **ENTER** to select.



Menu 7-56

A warning screen will be displayed.



Menu 7-57

2. In case you are a qualified and authorized service person.

If yes, Press **ENTER** to continue (Further description of the Gamma Corrections are given in the installation manual).  
If no, Press **EXIT** to return to the *Common Settings* menu.

### 7.5.4 CRT Run In Cycle

#### When necessary?

Only necessary when a new picture tube is installed.

### When available?

CRT Run In Cycle can only be activated when one or more memory blocks on an internal # pattern are available.

If no such a block is available, the projector cannot run CRT Run In Cycle and leaves the adjustment mode. If you still want to run CRT run in cycle, create first a memory block on an internal # pattern and restart CRT Run In Cycle .

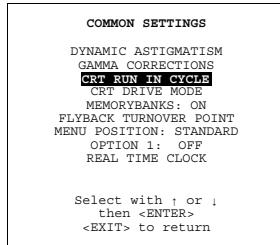
### What is done?

A flashing white image (5sec. on, 5 sec. off) is generated for 5 min. on the first internal block. In the next 5 min., the next internal block available will be used to generate the flashing white image.

The image will also be shifted in a vertical way to prevent a CRT burn in.

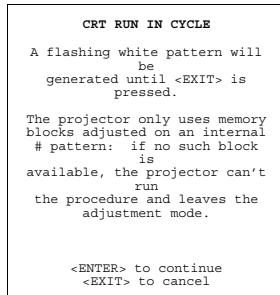
### How to select CRT Run In Cycle?

1. Push the **↑** or **↓** keys to highlight **CRT Run In Cycle** and press **ENTER** to select.



Menu 7-58

The **CRT Run In Cycle** menu will be displayed.



Menu 7-59

2. Press **EXIT** to quit the CRT Run In Cycle.

#### 7.5.5 CRT Drive Mode

### What can be done?

The projector CRT's can be driven with the normal current (normal mode), a lower current (economic mode) or with a higher current (boost mode). The higher the current, the higher the light output but the lifetime of the CRT's will shorten.

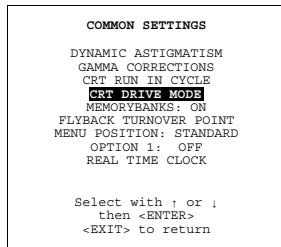
### Which CRT Drive Modes are available?

Normal	Default Setting
Economic	Lower drive current to the CRT's, the lifetime of the CRT's will enlarge but the light output will reduce.
Temporary Boost	Higher drive current to the CRT's, the lifetime of the CRT's will shorten but the light output will be higher. This situation is temporary, when restarting the projector, the drive mode is automatically set to normal.
Permanent Boost	Higher drive current to the CRT's, the lifetime of the CRT's will shorten but the light output will be higher. This setting will be saved in the EEPROM. When restarting the projector, it will start up in boost mode.

## 7. Service Mode

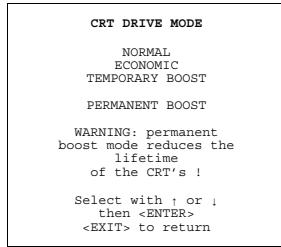
### How to change the CRT Drive Mode?

1. Push the **↑** or **↓** keys to highlight **CRT Drive Mode** and press **ENTER** to select.



Menu 7-60

The **CRT Drive Mode** menu will be displayed.



Menu 7-61

2. Push the **↑** or **↓** keys to highlight the desired **CRT Drive Mode** and press **ENTER** to activate.

**Note:** When Permanent Boost mode is selected, a warning will be displayed, when Text is On this warning will be repeated every time a new source is selected.

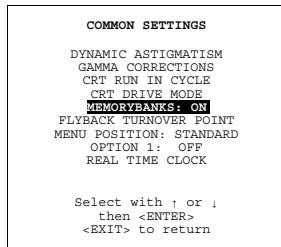
### 7.5.6 Memory Banks

#### What can be done?

The user has the possibility to create 8 different memory banks (formats) for each source. But, the maximum allowed quantity of memory banks for all sources together is 32. The option to create different memory banks for the same source can be switched On or Off.

#### How to toggle Memory Banks On/Off?

1. Push the **↑** or **↓** keys to highlight **Memory Banks**.



Menu 7-62

2. Press **ENTER** to toggle Memory Banks On/Off.

On	Different memory banks available for the same source
Off	Only one memory bank available.



If different memory banks are available for the same source and the memory bank option is toggled back to Off, only the first memory bank will be used to display the source.

#### How to create a New Memory Bank?

1. Select the desired source using the RCU e.g. source 1 (Video 64 kHz, 60 Hz).

The projector selects the last used memory bank.

2. Press **ENTER** to continue.
3. Push the corresponding digit (between 1 and 8) of a non existing memory bank e.g. bank 4.
- Note:** *The memory banks can be created in random order, it is possible first to create bank 4 and later on bank 2.*
4. Make the necessary adjustments e.g. change the vertical frequency from 60 Hz to 50 Hz.

Due to the vertical frequency change the projector will create a new block with bank number 4.

### How to Recall a Memory Bank?

When Memory Bank is On, an on-screen display with the last used memory bank settings will be displayed when selecting a source, to switch to another Memory Bank:

1. Press **ENTER** to select the next memory bank in increasing order.

The on-screen display will be updated.

Or,

Use the digit keys to enter the number of the desired memory bank.

The on-screen display will be updated.

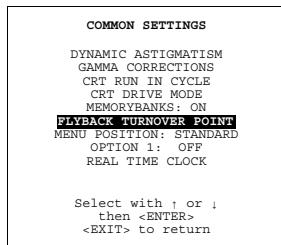
### 7.5.7 Flyback Turnover Point

#### What can be done?

The horizontal flyback time for horizontal frequencies can be long or short. The turnover point from long to short can be set by the user.

#### How to adjust the Flyback Turnover Point?

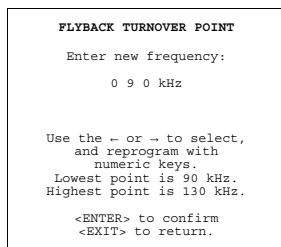
1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Flyback Turnover Point* and press **ENTER** to select.



Menu 7-63

The Flyback Turnover Point menu will be displayed, the actual Flyback Turnover Point Frequency will be filled in.

2. Use the cursor keys to select the desired digits and enter the new value using the digit keys on the RCU.



Menu 7-64

**Note:** *The Flyback Turnover Point Frequency should be somewhere between 90 kHz and 130 kHz.*

3. Press **ENTER** to activate the Flyback Turnover Point Frequency.

### 7.5.8 Menu Position

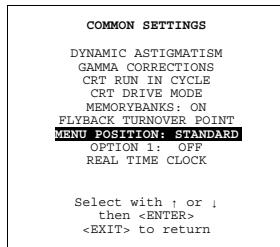
#### What can be done?

The bar scale menu, warning and message boxes can be displayed in the right lower corner or in the middle of the screen.

## 7. Service Mode

### How to change the Menu Position?

1. Push the **↑** or **↓** keys to highlight *Menu Position*.



Menu 7-65

2. Press **ENTER** to toggle between *Standard* or *Middle*.

Standard	The bar scale menu, warning and message boxes are displayed in the right lower corner of the screen.
Middle	The bar scale menu, warning and message boxes are displayed in the middle of the screen.

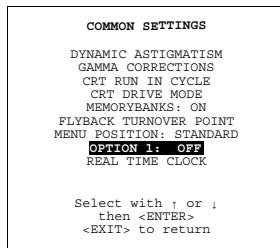
#### 7.5.9 Option 1

##### What can be done?

This function can be used to control an item of an optional kit.

##### How to toggle Option 1 On/Off?

1. Push the **↑** or **↓** keys to highlight *Option 1*.



Menu 7-66

2. Press **ENTER** to toggle *Option 1* On or Off.

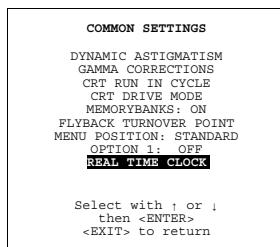
#### 7.5.10 Real Time Clock

##### What can be done?

This function will set the time and date of the projector.

##### How to adjust the Real Time Clock?

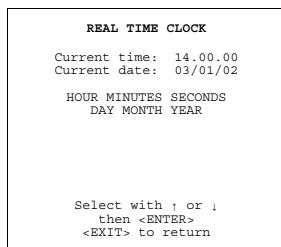
1. Push the **↑** or **↓** keys to highlight *Option 1* and press **ENTER** to continue.



Menu 7-67

The *Real Time Clock* menu will be displayed.

2. Use the cursor keys to highlight the desired item and press **ENTER** to select.



Menu 7-68

3. Enter the new value using the digit keys on the RCU.
4. Press **EXIT** to return to the *Common Settings* menu.

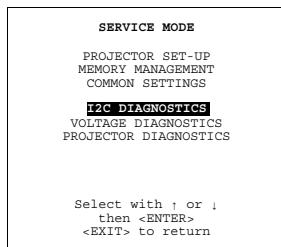
## 7.6 I2C Diagnostics

### What can be seen?

The I2C diagnostics menu gives an overview of the I2C failures inside the projector.

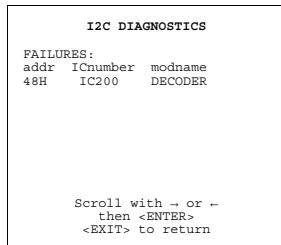
### How to start up I2C Diagnostics?

1. Push the ↑ or ↓ keys to highlight *I2C Diagnostics* and press **ENTER** to select.



Menu 7-69

The *I2C Diagnostics* menu will be displayed.



Menu 7-70

Following information will be displayed:

- The IC2 Address.
- The IC Number.
- The Module Name.

2. Push the ↑ or ↓ keys to scroll through the failure list.
3. Press **EXIT** to return to the *Service Mode* menu.



When no errors are detected a "No errors on IC2-bus detected" will be displayed.

## 7.7 Voltage Diagnostics

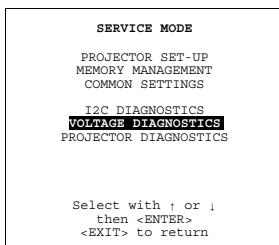
---

### What can be seen?

The numeric value of the different voltages will be displayed in real time in the *Voltage Diagnostics* menu.

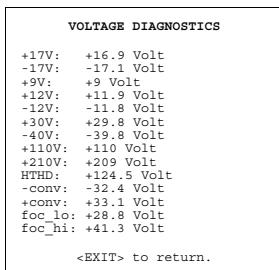
### How to start up Voltage Diagnostics?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Voltage Diagnostics* and press **ENTER** to select.



Menu 7-71

The *Voltage Diagnostics* menu will be displayed.



Menu 7-72

## 7.8 Projector Diagnostics

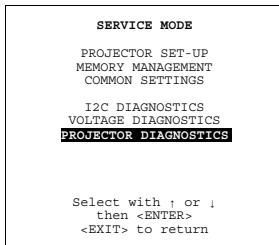
---

### What can be seen?

A log of the last 5 events including the run time when the event happened can be consulted in the Projector Diagnostics.

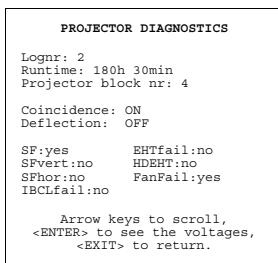
### How to start up Projector Diagnostics?

1. Push the  $\uparrow$  or  $\downarrow$  keys to highlight *Projector Diagnostics* and press **ENTER** to select.



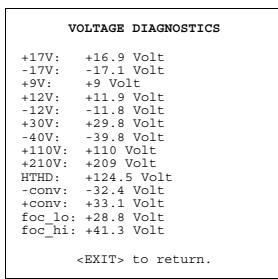
Menu 7-73

The last failure will be displayed in the *Projector Diagnostics* menu.



Menu 7-74

2. Use the cursor keys to scroll through the failure log.
3. Press **ENTER** to switch to the *Voltage Diagnostics* menu.



Menu 7-75

4. Press **EXIT** to return to the *Projector Diagnostics* menu.



## 8. MESSAGES, WARNINGS AND FAILURES

### Overview

- Messages
- Warnings
- Failures

### 8.1 Messages

#### Messages

INPUT 01 RGB2 Fh=064kHz Fv=060Hz	When selecting a new source, following information about this source will be displayed on the screen: Source number, horizontal and vertical frequencies of the displayed source.
SOURCE 01 RGB2	Announcement of the selected source.
enter password XXXX	Message to enter your password, password contains 4 digits.
WRONG PASSWORD !!!	Message when the entered password is wrong
TEXT on SOURCE 01 RGB2 xxxxkHz xxHz	These messages will be displayed on the screen when pushing the TEXT key.
TEXT On	TEXT On: the 'bar scale indication' will be enabled during the change of an analog control in the 'operational mode' + all warnings and failures will be displayed.
TEXT Off	Text OF: the 'bar scale indication' will be disabled during the change of an analog control in the 'operational mode' + all warnings and failures will not be displayed.
PROJECTOR ADDRESS: 003	Indication of the projector address when activating the 'ADDRESS' button on the RCU with a pencil or other small object.

### 8.2 Warnings

#### Warnings

WARNING: Input not available	When using the projector with the RCVDS, this warning will be displayed when selecting an input slot of an RCVDS where the input board is missing.
WARNING: Source not available	The input is a valid input but the source is not connected to the input terminals or the input source is switched off.
WARNING: Invalid key intro	When a wrong key is pressed on the RCU.
WARNING: End of adjust range	End of adjustment range.
WARNING: Input no longer available	The input source is no longer available.
WARNING: RCVDS not available	The input source selector is not available.
WARNING: invalid frequency input	The entered frequency or applied frequency of the source is out of the projector's range.
WARNING: permanent BOOST mode in use !!!	The CRT drive mode is switched to permanent boost.
WARNING: Option not installed !	Option not installed. e.g. Video selected but no decoder installed.

### 8.3 Failures

#### Failures

FAILURE I2C error addr.: 7FH3	Hardware failure. Call a qualified service technician for repair.
FAILURE short circuit on I2C bus	Hardware failure. Call a qualified service technician for repair.
FAILURE RCVDS communication error	Serial communication error between the RCVDS and the projector.
FAILURE invalid input	Input not valid
FAILURE PC communication error	Error in the communication between the projector and the PC.
FAN FAILED Projector will switch off	Projector switched off due to a fan fail.

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## Revision Sheet

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From: \_\_\_\_\_

Date: \_\_\_\_\_

Please correct the following points in this documentation (R5976633/00):

page	wrong	correct